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FINAL ENVIRONMENTAL ASSESSMENT

PROPOSED SOUTHERN NEVADA REGIONAL HELIPORT Clark County, Nevada

Prepared for:

CLARK COUNTY DEPARTMENT OF AVIATION

**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

**U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

As a Cooperating Agency pursuant to 40 CFR 1501.6(a)(1)

Prepared by:

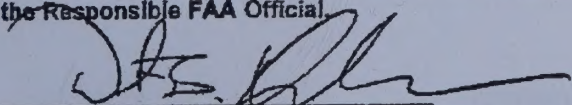
Ricondo and Associates, Inc.

In association with:

**Brown-Buntin Associates, Inc.
SWCA Environmental Consultants
The Louis Berger Group, Inc.
ASRC Aerospace Corporation
Granite Environmental, Inc.**

December 2008

**This environmental assessment becomes a Federal document when evaluated, signed and dated by
the Responsible FAA Official.**


Responsible FAA Official

Date

12/09/2008

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SOUTHERN REGIONAL REPORT
April 2000, Volume 1

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THE STATE OF CALIFORNIA
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I. Purpose and Need

1.1 Introduction

This Environmental Assessment (EA) documents the potential environmental effects associated with the construction and operation of the proposed Southern Nevada Regional Heliport (the Heliport) at the South of Sloan site (the Heliport site). The EA was prepared in accordance with federal, State of Nevada, and local laws and regulations, including those specified in Federal Aviation Administration (FAA) Order 1050.1E, *Environmental Impacts: Policies and Procedures* [I-1]¹, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* [I-2], and the U.S. Department of the Interior, Bureau of Land Management (BLM) *NEPA Handbook H-1790-1* [I-3].

1.2 Background

Over the past 10 years, helicopter air tours to the Grand Canyon have increased at a faster rate than air carrier activity in the Las Vegas region. A majority of the helicopter tours originate at McCarran International Airport (McCarran), centrally located within the urbanized area of the Las Vegas region. Helicopter air tour activity at McCarran grew by a compounded annual rate of about 20.7 percent from 2000 to 2004; during the same period, air carrier activity at McCarran increased at a compounded annual rate of 4.3 percent.

The helicopter air tours offer a unique opportunity to experience the Grand Canyon from the Las Vegas Strip in about one-half day. Helicopter air tour passengers are typically tourists who are transported via limousine or bus from hotels on the Las Vegas Strip to the helicopter base where they are briefed about the tour and loaded onto helicopters for the flight to the Grand Canyon area. The helicopter operators fill as many helicopters as it takes to accommodate the passengers and fly them to near the Grand Canyon². After some time afforded for viewing and enjoyment of the Grand Canyon, passengers are flown back to the helicopter base, and then returned via limousine or bus to their point of origin on the Las Vegas Strip. The success of the helicopter air tours of the Grand Canyon relies upon the ability to transport the passengers between the strip and the helicopter base, conduct the round trip flight, and provide a reasonable amount of time at the Grand Canyon, all within a time span of about one-half day. This allows visitors who have limited time in Las Vegas to experience the Grand Canyon. Due to helicopter fuel capacity limitations, time demands, and operating costs, Grand Canyon helicopter air tours typically follow direct routes with limited *ad hoc* deviations to other points of interest.

It was estimated from the results of a helicopter noise study conducted at the end of 2000 that about 100,000 residents (or 7 percent of the regional population) live within one mile of the corridors followed by the helicopters traveling between McCarran and the Grand Canyon. In June 2003, in response to concerns related to noise from helicopter overflights, the Nevada State Legislature amended the Nevada Revised Statutes, Chapter 495 Sections 300-320 (NRS 495) [I-4], to require

¹ Numbers in brackets refer to references found in Chapter V of this EA.

² The Study Areas in this EA, as defined in Section 3.2, are located outside of the administrative boundary of the Grand Canyon National Park. While some helicopter air tours that originate and conclude at McCarran International Airport enter airspace subject to the Special Federal Aviation Regulation No. 50-2, Special Flights Rules in the Vicinity of the Grand Canyon National Park, AZ, the alternatives examined in this EA would be equally subject to and would equally affect and be affected by SFAR No. 50-2, which is administered by the FAA and National Park Service. [I-5]

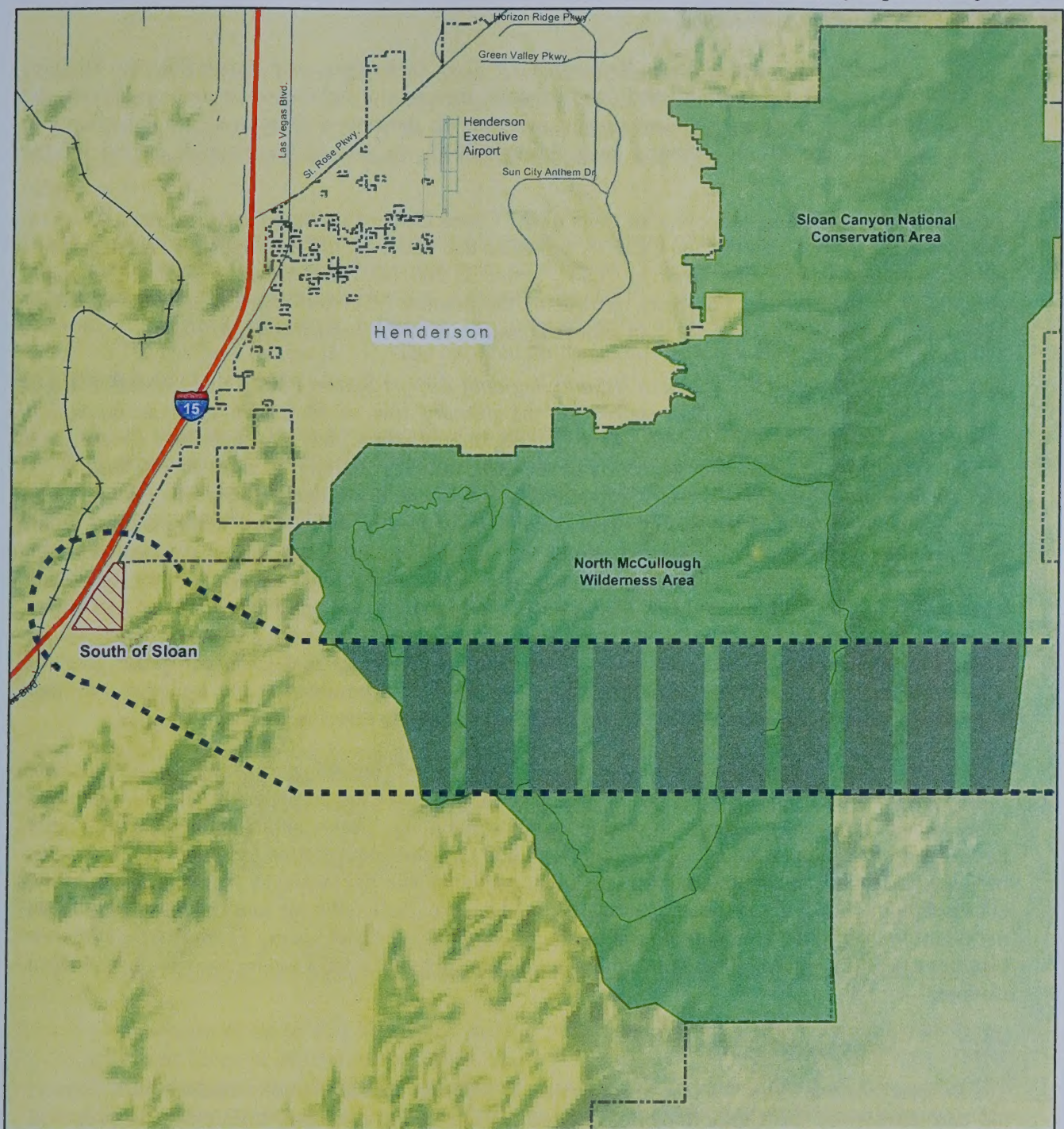
certain counties, including Clark County, to designate a preferred non-urban heliport site, which met certain criteria, no later than January 1, 2004. A copy of NRS 495 is provided in **Appendix A as Attachment A-1**. To fulfill the requirements of NRS 495 and in efforts to address community input³, the Clark County Department of Aviation (CCDOA) completed several planning studies, listed below, establishing siting and facility requirements and identifying a potential location for development of a non-urban heliport. For the purposes of the planning efforts, the CCDOA determined that, at a minimum, the site would need to be (1) located to minimize helicopter overflights of the urban areas of the Las Vegas region, (2) located to provide an alternative base of operations for the Grand Canyon helicopter air tour operators, and (3) sized to accommodate forecast demand for helicopter air tour service to the Grand Canyon from the Las Vegas region.

In Public Law 109-115, Section 180 [I-6], Congress authorized BLM to transfer a 229-acre parcel of land to Clark County exclusively for the construction and operation of a heliport. The legislation further required that helicopter air tour operators (i) pay a \$3 per passenger “conservation fee” for helicopter air tours that traverse the Sloan Canyon National Conservation Area (NCA), and (ii) fly along a prescribed corridor and above a prescribed altitude when traversing the Sloan Canyon NCA. **Exhibit I-1** shows the 229-acre parcel referred to as the South of Sloan site and the prescribed corridor over the Sloan Canyon NCA. A copy of Public Law 109-115, Section 180 is provided in Appendix A as **Attachment A-2**.

The various planning studies completed by the CCDOA include:

- *Needs Assessment for a Southern Nevada Regional Heliport* (the Needs Assessment) [I-7] – documented the physical and operational characteristics of commercial helicopter operations, and identified generalized facility requirements for a non-urban heliport.
- *Site Suitability Assessment for a Southern Nevada Regional Heliport* (the Site Suitability Assessment) [I-8] – assessed the suitability of 13 candidate sites to accommodate the helicopter facility requirements identified in the Needs Assessment.
- *Supplemental Site Suitability Assessment of the South of Sloan Site* (the SOS Site Suitability Assessment) [I-9] – assessed the suitability of the South of Sloan site to accommodate commercial helicopter operations following input from stakeholders, including City of Henderson residents and the Anthem community.
- *Project Definition, Development, and Operational Manual, Southern Nevada Regional Heliport* (PDDOM) [I-10] – updated and refined the requirements for the Heliport on the South of Sloan site, including development and operating standards.
- *Conceptual Heliport Layout Plan* [I-11] – provided a graphic depiction of the Heliport, including helicopter landing and takeoff areas, taxiing areas, helicopter parking pads, terminal facilities, ground vehicular access and parking areas, and other ancillary facilities. The Conceptual Heliport Layout Plan was developed in conjunction with the PDDOM to facilitate the FAA’s review and approval during the environmental review process to ensure that applicable FAA standards would be met.

³ See **Appendix B** for a timeline of the planning process for the Heliport, including neighborhood meetings and topics of concern raised by the community, before and after the passage of NRS 495.



- | | | | | | | | |
|--|---|--|----------------------------|--|--|--|----------------|
| | Proposed heliport site area
(Federal land transfer) | | Overflight
area | | National Conservation Area
or Wilderness Area | | Railroad |
| | Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area | | Jurisdictional
boundary | | Primary road | | Secondary road |

Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph);
Public Law 109-115, Section 180 (land transfer authorization and flight corridor designation).

Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit I-1

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Federal Land Transfer and Prescribed Flight Corridor over Sloan Canyon National Conservation Area

- *Forecasts of Grand Canyon Helicopter Air Tour Operations and Passengers* (the Heliport Forecasts) [I-12] – established unconstrained forecasts of helicopter air tour operations and passengers that represent anticipated increases in demand if there were no constraints in terms of facility or operating costs through 2017, the end of the planning period for the Heliport.

Four operators providing helicopter air tours of the Grand Canyon are based at McCarran. Based on data collected from AirScene,⁴ the CCDOA estimates that about 44,700 helicopter air tour departures were accommodated at McCarran in 2004⁵, about 33,200 of which were Grand Canyon tours. According to the Heliport Forecasts, growth in the number of Grand Canyon helicopter air tour operations is forecast to continue, at an annual average rate of 4.0 percent through 2017.

The CCDOA completed the *Southern Nevada Regional Airport System Plan* [I-13] (System Plan) in August 2001. The System Plan states that the primary role of McCarran is to accommodate commercial aviation activity for the Las Vegas region, including both passenger and air cargo air carrier operations. Corporate general aviation and military activity is also accommodated at McCarran, but both are of secondary importance to commercial aviation activity. The facility area use plan for McCarran in the System Plan depicts areas preserved for future commercial aviation uses on the west side of the Airport, along with areas for corporate general aviation activity. Currently, Grand Canyon helicopter air tour operators, along with helicopters for television newsgathering, fire fighting, and Las Vegas Strip air tours are based on the west side of McCarran. Considering the forecast increases in Grand Canyon helicopter air tours, additional space will be needed to accommodate future activity. Based upon a review of the facility area use plan for McCarran in the System Plan, no additional space exists to accommodate the helicopter air tour operators without using land needed for McCarran to continue to serve its primary role.

In response to the combination of increasing aviation demand (including that for helicopter air tour operations) and the facility constraints at McCarran, the Grand Canyon helicopter air tour operators based at McCarran may choose to relocate to other facilities. These facilities could include other airports owned and operated by Clark County, airports owned and operated by other public entities, or the expansion or development of private heliports/helipads in the Las Vegas region⁶. Conversely, constructing a new heliport to accommodate Grand Canyon helicopter air tour operators would not necessarily result in the elimination of all such air tour activity at McCarran. There is strong interest from the operators currently based at McCarran to relocate their Grand Canyon tours to the proposed Heliport.

1.3 Proposed Action

The Proposed Action is the transfer of ownership of federally managed public land to Clark County; the construction of the Heliport and associated infrastructure, including utilities. The proposed

⁴ AirScene is a proprietary software package developed and licensed by ERA – Beyond Radar Corporation that allows the CCDOA to analyze and produce aircraft operations data from flight information collected by the local FAA Air Traffic Control facility at McCarran. The CCDOA has used the software package since July 2000.

⁵ 2004 is the base year for the Heliport Forecasts. Statistics for activity since 2004 are provided in Section 3.3.

⁶ Clark County has placed a moratorium on the implementation of new heliports for commercial uses until September 21, 2009; new private heliports cannot be approved in unincorporated Clark County during the moratorium.

location for the Heliport is the South of Sloan site, as shown on **Exhibit I-2**. The site is within unincorporated Clark County, is currently administered by the BLM, and is the site authorized by Congress to be transferred to CCDOA for a heliport pursuant to Public Law 109-115. Environmental evaluation of both the transfer of land and the development and operation of the Heliport are the subject of this EA.

Based on the requirements identified in early planning studies and refined in the PDDOM, a plan for the overall development of the Heliport has been established. The preliminary layout of the facility is illustrated in the conceptual Heliport Layout Plan (HLP), as shown on **Exhibit I-3**. The conceptual HLP was prepared following the requirements of FAA Advisory Circular (AC) 150/5390-2B, *Heliport Design* [I-14]. The required utility improvements and extensions are depicted on **Exhibit I-4**.

The Heliport is expected to be developed in two phases. The first of the two construction phases is expected to be completed in 2010, at which time the Heliport is expected to become operational. To accommodate initial demand and anticipated increases in demand over a five-year period, the following actions would be required in the first phase:

- Transfer of ownership of a portion of Clark County's Assessor's parcel number 204-01-000-004 (about 229 acres) from the BLM to Clark County for the Heliport [I-6].
- Construction of 15,800 feet of new 3-phase electrical main line above ground, and going below near the Heliport. The new lines would generally follow the right-of-way of Las Vegas Boulevard South.
- Upgrade of about 24,200 feet of existing power lines, generally between Lake Mead Drive and Sloan
- Construction of a water pump station and associated electrical connections, about 15,000 feet of water main from the Sloan pump station to the Heliport, and two five-million gallon water tanks on the Heliport site.⁷ The water main would be constructed generally within the right-of-way of Las Vegas Boulevard South from the Sloan pump station to the Heliport.
- Installation of approximately 52,000 feet of 100-pair underground telecommunications cable from the south to the Heliport. The new communication lines would be constructed generally within the right-of-way of Las Vegas Boulevard South from Jean, Nevada to the Heliport.
- Site preparation, grading, and on-site drainage of the Heliport site
- Paving, marking, and lighting of four final approach and takeoff (FATO) areas and Heliport taxiways
- Construction of up to 100 helicopter parking pads to support Grand Canyon tour operators and some itinerant helicopter operations
- Paving, marking, and lighting of helicopter parking aprons, tiedowns, and hangars
- Construction of passenger terminal facilities and associated automobile parking lots to support Grand Canyon helicopter air tour operators
- Construction of a CCDOA management building
- Construction of helicopter hangar/maintenance facilities
- Construction of a helicopter fueling system and above ground fuel storage facility
- Construction of on-site sewage treatment facilities
- Installation of a Heliport Rotating Beacon and wind indicator

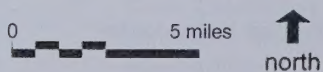
⁷ The pump station would be constructed on a right-of-way already granted by the BLM to the Las Vegas Valley Water District.



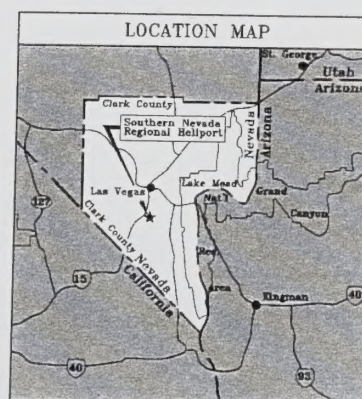
- | | | | |
|--------------------------|------------------|-----------------------------|---|
| ★ Proposed Heliport site | — Primary road | — Railroad | Bureau of Land Management Disposal Area |
| | — Secondary road | --- Jurisdictional boundary | |

Source: Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit I-2



Proposed Action



HELIPORT DATA		
	EXISTING	FUTURE
1. LIPORT ID: (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)	NA	2500000 MS.
2. LIPORT NAME: (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z)	NA	1 A 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150 1160 1170 1180 1190 1200 1210 1220 1230 1240 1250 1260 1270 1280 1290 1300 1310 1320 1330 1340 1350 1360 1370 1380 1390 1400 1410 1420 1430 1440 1450 1460 1470 1480 1490 1500 1510 1520 1530 1540 1550 1560 1570 1580 1590 1600 1610 1620 1630 1640 1650 1660 1670 1680 1690 1700 1710 1720 1730 1740 1750 1760 1770 1780 1790 1800 1810 1820 1830 1840 1850 1860 1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100 2110 2120 2130 2140 2150 2160 2170 2180 2190 2200 2210 2220 2230 2240 2250 2260 2270 2280 2290 2300 2310 2320 2330 2340 2350 2360 2370 2380 2390 2400 2410 2420 2430 2440 2450 2460 2470 2480 2490 2500 2510 2520 2530 2540 2550 2560 2570 2580 2590 2600 2610 2620 2630 2640 2650 2660 2670 2680 2690 2700 2710 2720 2730 2740 2750 2760 2770 2780 2790 2800 2810 2820 2830 2840 2850 2860 2870 2880 2890 2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060 3070 3080 3090 3100 3110 3120 3130 3140 3150 3160 3170 3180 3190 3200 3210 3220 3230 3240 3250 3260 3270 3280 3290 3300 3310 3320 3330 3340 3350 3360 3370 3380 3390 3400 3410 3420 3430 3440 3450 3460 3470 3480 3490 3500 3510 3520 3530 3540 3550 3560 3570 3580 3590 3600 3610 3620 3630 3640 3650 3660 3670 3680 3690 3700 3710 3720 3730 3740 3750 3760 3770 3780 3790 3800 3810 3820 3830 3840 3850 3860 3870 3880 3890 3900 3910 3920 3930 3940 3950 3960 3970 3980 3990 4000 4010 4020 4030 4040 4050 4060 4070 4080 4090 4100 4110 4120 4130 4140 4150 4160 4170 4180 4190 4200 4210 4220 4230 4240 4250 4260 4270 4280 4290 4300 4310 4320 4330 4340 4350 4360 4370 4380 4390 4400 4410 4420 4430 4440 4450 4460 4470 4480 4490 4500 4510 4520 4530 4540 4550 4560 4570 4580 4590 4600 4610 4620 4630 4640 4650 4660 4670 4680 4690 4700 4710 4720 4730 4740 4750 4760 4770 4780 4790 4800 4810 4820 4830 4840 4850 4860 4870 4880 4890 4900 4910 4920 4930 4940 4950 4960 4970 4980 4990 5000 5010 5020 5030 5040 5050 5060 5070 5080 5090 5100 5110 5120 5130 5140 5150 5160 5170 5180 5190 5200 5210 5220 5230 5240 5250 5260 5270 5280 5290 5300 5310 5320 5330 5340 5350 5360 5370 5380 5390 5400 5410 5420 5430 5440 5450 5460 5470 5480 5490 5500 5510 5520 5530 5540 5550 5560 5570 5580 5590 5600 5610 5620 5630 5640 5650 5660 5670 5680 5690 5700 5710 5720 5730 5740 5750 5760 5770 5780 5790 5800 5810 5820 5830 5840 5850 5860 5870 5880 5890 5900 5910 5920 5930 5940 5950 5960 5970 5980 5990 6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530 6540 6550 6560 6570 6580 6590 6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900 7910 7920 7930 794

BUILDING & FACILITY INVENTORY	
FUTURE	EXPANSION
(1) TRAILER, TRUCKS, ETC.	(1) TRAILER, TRUCKS, ETC.
(2) CONSTRUCTION COST	
(3) SPECIALTIES	
(4) SPECIALTIES	(4) SPECIALTIES
(5) OTHER	(5) OTHER
(6) TRAILERS	
(7) SPECIALTIES	
(8) OTHER	
(9) OTHER	
(10) OTHER	
(11) OTHER	
(12) OTHER	
(13) OTHER	
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(93) OTHER	
(94) OTHER	
(95) OTHER	
(96) OTHER	
(97) OTHER	
(98) OTHER	
(99) OTHER	
(100) OTHER	

Station: McCarran International Airport, Las Vegas, Nevada
Period of Record: January 1997 - December 2001
No. of Observations: 87,404
Wind Data Source: National Climatic Data Center
 U.S. Department of Commerce
 Asheville, North Carolina

FATO END COORDINATES (N.A.D. 83 DATUM)		
FATO	EXISTING	FUTURE
NORTH 201	N/A	EA 2+50 25.45 LC 6+12 28.61
NORTH 223	N/A	EA 3+52 22.13 LC 6+12 30.71
NORTH 023	N/A	EA 3+50 27.18 LC 6+12 31.14
SOUTH 021	N/A	EA 3+50 19.77 LC 6+12 28.61
NORTH 207	N/A	EA 3+50 25.77 LC 6+12 31.06
NORTH 101	N/A	EA 3+50 25.75 LC 6+12 31.06
SOUTH 109	N/A	EA 3+50 25.75 LC 6+12 31.06
SOUTH 02	N/A	EA 3+50 25.75 LC 6+12 31.06

FATO ELEVATION DATA (N.A.V.D. 88 DATUM)					
NORTH FATOs			SOUTH FATOs		
LOCATION	EXISTING (MSL)	FUTURE	LOCATION	EXISTING (MSL)	FUTURE
7/8" - 01	V/S	3052.53'	7/8" - 02	N/A	2990.63'
7/1 - 20"R	V/S	3078.93'	7/1 - 19"R	N/A	3000.00'

FATO SAFETY AREA (FSA)						
	FEE SIMPLE	PROPERTY TYPE (ACRES) ±				TOTAL ACRES
		EASEMENT		NON-EASEMENT		
		PRIVATE	BLM	PRIVATE	BLM	
CR-17 FSAC	2.5					2.5
SOUTH FSAC	2.5	--	--			2.5

F.A.R. PART 77 DATA		
IMAGINARY SURFACE	SLOPE	HORIZONTAL DISTANCE
000000	0	0.00 AREA
000000	0	0.00

THE CONTENTS OF THESE DOCUMENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEW OF THE FBI AND ARE NOT TO BE DISTRIBUTED OUTSIDE THE FBI. IT IS REQUESTED THAT YOU DO NOT DISCLOSE THE CONTENTS OF THESE DOCUMENTS TO ANY OTHER AGENCIES OR INDIVIDUALS WITHOUT THE WRITTEN PERMISSION OF THE FBI. IT IS REQUESTED THAT YOU DO NOT DISCLOSE THE CONTENTS OF THESE DOCUMENTS TO ANY OTHER AGENCIES OR INDIVIDUALS WITHOUT THE WRITTEN PERMISSION OF THE FBI.

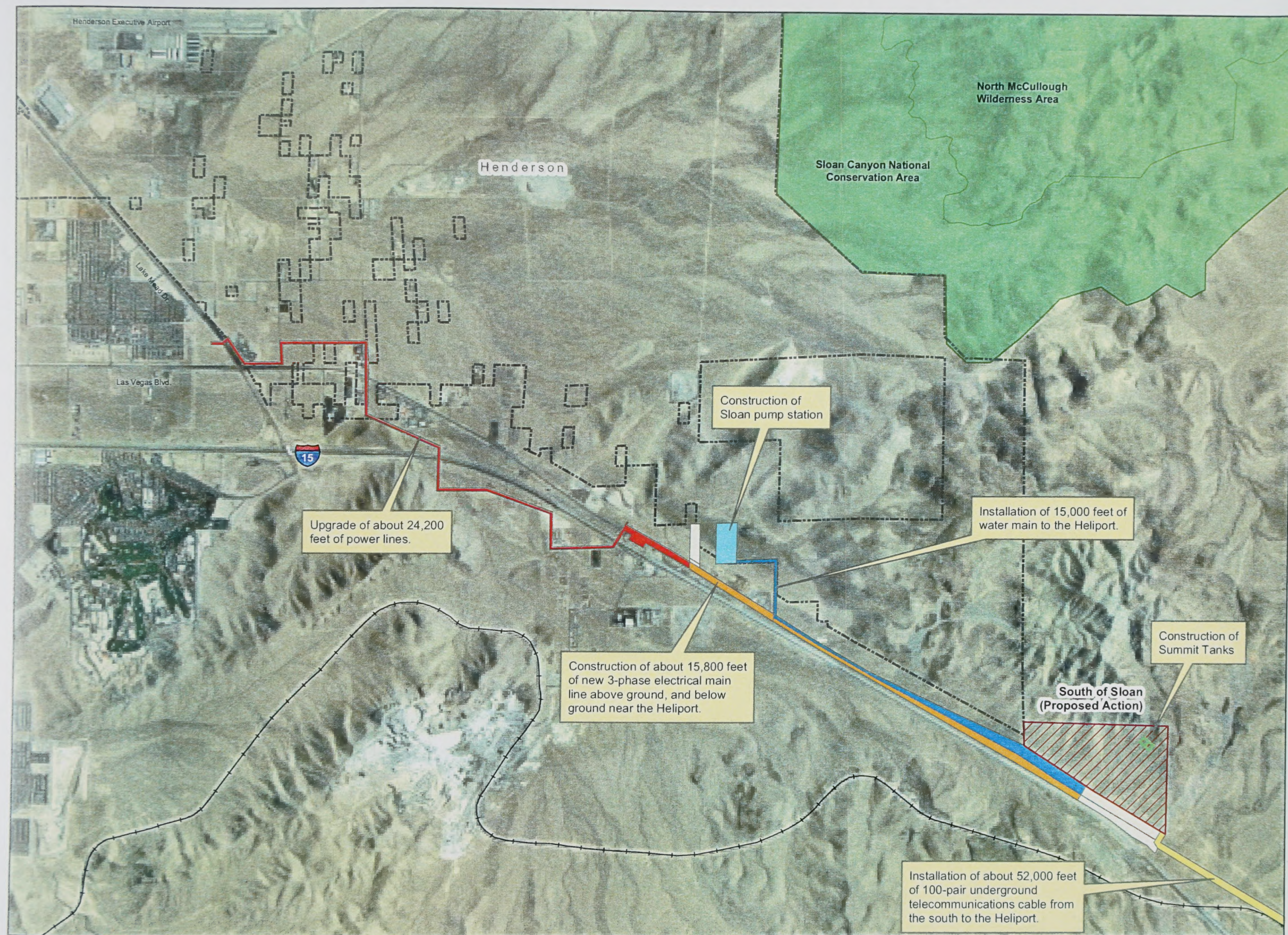
LEGEND		
EXISTING	FUTURE	DESCRIPTION
1/2A		STRUCTURE
1/2A		1A C PAVLMAN
1/2A		TAX REUSE TOWNSET
1/2A		PROPERTY, 1/2 A/C
1/2A		ART POTENTIAL
1/2A		3/4 INCH 1/2 INCH FOR U/L
1/2A		WALKWAY
1/2A		FINCH
1/2A		PLANT FOR 1/2 A/C
1/2A		1/2 INCH 1/2 INCH, 1/2 INCH
1/2A		TAX POTENTIAL, 1/2 A/C
1/2A		1/2
1/2A		"ATL"
1/2A		1/2 INCH 1/2 INCH
1/2A		1/2 INCH 1/2 INCH
1/2A		1/2 INCH 1/2 INCH
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1/2A		1/2 INCH 1/2 INCH

NO.	REVISIONS	BY	AMTD	DATE	T&E APPROVAL STY 007 24 APPROVED RALPH 10/18/07
Prepared by: _____ Date: _____  Kenneth Walker, Director of Aviation Clerk, Nevada Department of Aviation					
DEPARTMENT OF AVIATION CLARK COUNTY, NEVADA SO. TOWN NEVADA REGIONAL AIRPORT SOUTH of Sloan, Nevada CONCEPTUAL HELIPORT LAYOUT DRAWING JULY 2007 07/23/07 CHECKED BY: _____					
DRAWN BY: _____ DRAWING NO: SMW_HLP_23July2007.DWG					
SHEET 1 OF 1					

December 2008

Final EA for a Southern Nevada Regional Heliport
Purpose and Need

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Legend

Proposed heliport site area

Proposed utility extensions and improvements*

Existing power lines to be upgraded

Proposed power lines

Proposed water line

Proposed Sloan pump station

Proposed telecommunication cable

* Due to ongoing detailed design, the exact location of the proposed utilities are unknown at this time.

Other features

National Conservation Area or Wilderness Area

Jurisdictional boundary

Railroad



Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph); Ricondo & Associates, Inc., January 2008; G.C. Wallace Companies. Draft "Off-site Utility Analysis and Preliminary Cost for Analysis for Heliport Site". November 30, 2007.
Prepared by: Ricondo & Associates, Inc., April 2008.

0 3,500 feet
north

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Legend

Proposed utility extensions and improvement*

Proposed telecommunication cable

Other feature

Railroad

* Due to ongoing detailed design, the exact location of the proposed utilities are unknown at this time.



Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph); Ricondo & Associates, Inc., January 2008; G.C. Wallace Companies. Draft "Off-site Utility Analysis and Preliminary Cost for Analysis for Heliport Site". November 30, 2007.
Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit I-4

0 3,500 feet
north

Proposed Utility Extensions and Improvements (2 of 2)

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- Construction of an access road from Las Vegas Boulevard South to the Heliport
- Acquisition of aircraft rescue and fire fighting (ARFF) equipment and construction of facilities, as appropriate

The second phase of construction would enable the Heliport to accommodate forecast activity through 2017. The second phase of construction would include:

- Construction of 11 additional helicopter parking pads
- Construction of additional passenger terminal facilities and associated automobile parking lots
- Construction of a helicopter hangar/maintenance facility

1.4 Purpose and Need

1.4.1 Sponsor's Purpose and Need

The overall purpose of undertaking the Proposed Action is to provide, as soon as practicable, a facility that will satisfy the existing and future needs of the Grand Canyon helicopter air tour operators and their customers in a manner that is compatible with the urbanized development in Clark County as well as with the overall plan for accommodating all aspects of aviation demand in the region. Several specific needs have been identified to meet this purpose.

The State of Nevada, Clark County, and Las Vegas area residents have identified an existing need to reduce, as soon as practicable, helicopter tour overflights and resulting adverse noise impacts over residential areas of Clark County. This need led the State legislature to amend NRS 495 in 2003. Also in recognition of and to address the adverse noise impacts associated with the helicopter air tour overflights from McCarran, balanced with the protection of the federally designated Sloan Canyon NCA, the U.S. Congress enacted Section 180 of Public Law 109-115 in 2005. The amended sections of NRS 495 require and contain criteria for designating a non-urban heliport site, and Section 180 provides for the transfer of land from BLM for a heliport, along with specifying a flight corridor through the Sloan Canyon NCA. While the FAA and the CCDOA have limited control over the movement of helicopters (other than FAA control within "controlled airspace" surrounding public use airports), designating a non-urban heliport site would promote the relocation of Grand Canyon helicopter tour operations out of urbanized areas of Clark County.

There also is a need to maintain consistency with the System Plan and to preserve adequate space at McCarran to ensure that it can continue to serve its primary role to accommodate commercial aviation activity for the Las Vegas region. As described in Section 1.2, there is not sufficient space to expand the Grand Canyon helicopter air tour basing areas without encroaching upon space needed for future development consistent with the primary role of McCarran. Therefore, development of another facility is needed to accommodate future demand for Grand Canyon helicopter air tours, ensuring that adequate space is preserved at McCarran for it to fulfill its role. Further, there is a need to preserve other airports in the region to serve their intended roles for accommodating aviation demand as also described in the System Plan.

Finally, there is a need to provide a facility that has adequate space and is appropriately located to accommodate not only existing demand, but also the increasing demand for helicopter air tours to the Grand Canyon. According to the Heliport Forecasts, demand for Grand Canyon air tours is expected to increase an average of 4.0 percent per year through the planning horizon of 2017. Also, to accommodate this demand, there is a need to provide a facility that is close enough to the customer base for it to be viable for the industry. Part of the overall attraction is the ability to visit the Grand

Canyon from Las Vegas in about one-half day. Therefore, travel between the facility and the customer base must be accomplished within a reasonable time. Finally, the facility must be located and configured to ensure safe and efficient operations, considering other aviation facilities and airspace.

1.4.2 Federal Purpose and Need

The FAA's statutory mission is to ensure the safe and efficient use of navigable airspace in the United States. Further, under the *Aviation Safety and Noise Abatement Act of 1979* [I-15], as amended, the FAA is directed to reduce aircraft noise impacts on noise sensitive land uses, where it can be done without derogating safety. Construction of the proposed Southern Nevada Regional Heliport would reduce noise from rotorwing aircraft (helicopters) currently operating at McCarran International Airport. For the proposed project, the purpose of the BLM is to convey a specific 229-acre parcel of land to Clark County for the operation of a heliport facility. BLM action at the sponsor's proposed site is required pursuant to Public Law 109-115, Section 180.

1.5 Requested Federal Actions

Federal actions by two agencies – the FAA and the BLM – are requested.

1.5.1 Federal Aviation Administration

The requested FAA actions include the following:

- Unconditional approval of the Heliport Layout Plan that depicts the proposed airfield pursuant to 49 United States Code (U.S.C.) § 40103(b), 44718, and 47107(a)(16) and 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace* [I-16] and Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports* [I-17].
- Determinations under 49 U.S.C. §§ 47106 and 47107 relating to the eligibility of the proposed project for federal funding under the Airport Improvement Program (AIP) and under 49 U.S.C. § 40117, as implemented by 14 CFR § 158.25, to impose and use passenger facility charges (PFC's) collected at McCarran International Airport for the proposed project to assist with construction of potentially eligible development items shown on the HLP.
- Determination under 49 U.S.C. § 44502(b) that Heliport development is reasonably necessary for use in air commerce or in the interests of national defense.
- Close coordination with Clark County by appropriate FAA program offices, as required, to maintain aviation and airfield safety during construction.

1.5.2 Bureau of Land Management

The requested BLM actions include the following:

- Administrative action to convey to Clark County all right, title, and interest of the Heliport site, pursuant to Section 180 of Public Law 109-115, The Transportation Appropriations Act for Federal Fiscal Year 2006. While the land transfer is an administrative action that in and of itself does not cause direct impacts to the environment, federal law requires that the potential environmental effects of the intended use of the land be considered and disclosed. This land disposal action is consistent with the *Las Vegas Resource Management Plan/Final Environmental Impact Statement* [I-18]. The Proposed Action conforms to land use plan

decision LD-1 [I-19] under the authority of the *Federal Land Policy and Management Act of 1976*, as amended [I-20].

- Issuance of any associated rights-of-way (ROW) is in conformance with decision RW-1 [I-19] which states “meet public demand and reduce impacts to sensitive resources by providing an orderly system of development for transportation, including legal access to private inholdings, communications, flood control, major utility transmission lines, and related facilities.

1.6 Preliminary Construction Schedule

A preliminary development schedule for the Heliport is shown on **Exhibit I-5**. Under the current schedule, the CCDOA would begin on-site construction of the Heliport and in the utility corridors by late 2008 or early 2009. On-site construction, including tenant buildings, is scheduled to be completed by late 2010. It is anticipated that the second phase of construction, if needed, would occur in 2015.

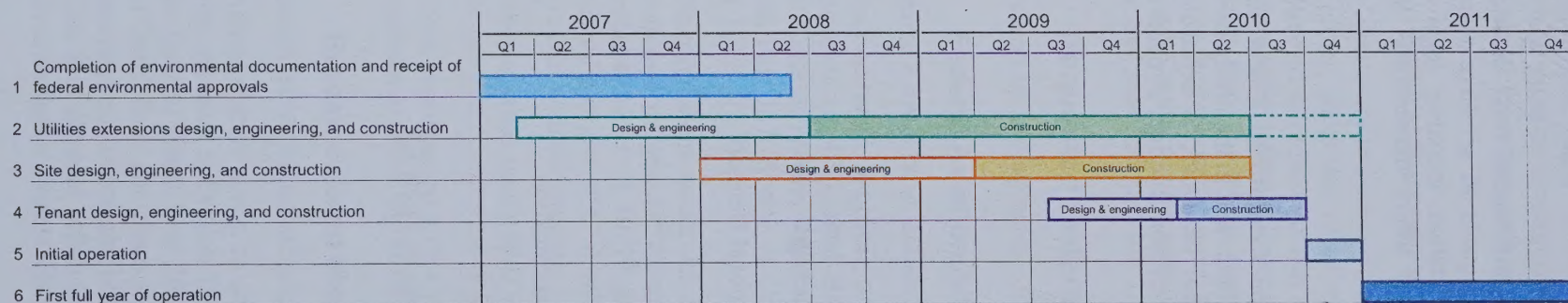
1.7 Organization of this EA

This EA is organized in the following order:

- Chapter I, Purpose and Need
- Chapter II, Alternatives
- Chapter III, Affected Environment
- Chapter IV, Environmental Consequences
- Chapter V, References
- Chapter VI, List of Preparers and Agencies and Persons Consulted
- Appendix A, Statutes
- Appendix B, Planning Timeline for a Southern Nevada Regional Heliport
- Appendix C, Supplement to Alternatives Analysis
- Appendix D, Helicopter Noise Analysis
- Appendix E, Land Use Plans and Zoning
- Appendix F, Air Quality Analysis
- Appendix G, Scoping
- Appendix H, Cultural Resources Consultation and Tribal Coordination
- Appendix I, Fish and Wildlife Consultation
- Appendix J, Visual Resources
- Appendix K, Agencies and Persons Consulted
- Appendix L, Public Involvement and Responses to Comments on Draft EA

Exhibit I-5

Preliminary Construction Schedule – First Phase



Sources: Ricondo & Associates, Inc.; Clark County Department of Aviation

Prepared by: Ricondo & Associates, Inc., April 2008

II. Alternatives

2.1 Introduction

The Council on Environmental Quality (CEQ) is an entity within the U. S. government that is tasked with, among other responsibilities, overseeing federal agency implementation of NEPA requirements [II-1]. CEQ regulations for implementing NEPA require a thorough and objective assessment of all “reasonable” alternatives to achieve the purpose and need of a proposed action, as well as the assessment of a no action alternative [40 CFR Part 1508.9; 40 CFR Part 1502.14].

As documented in the various planning documents referenced in Section 1.2, the CCDOA has carefully considered a wide range of options for meeting the purpose and need of the Proposed Action: accommodating existing and future demand for Grand Canyon helicopter air tour activity in a manner that is compatible with the urban environment of the Las Vegas region. This chapter describes the process followed to identify the range of initial alternatives for consideration in this EA and the screening process used to determine which of the initial alternatives would reasonably satisfy the purpose and need and therefore be carried forward for analysis of environmental consequences. Alternatives that were considered but were determined to not reasonably meet purpose and need were not carried forward through the analysis of environmental consequences. The chapter concludes with a summary of the potential environmental consequences associated with the alternatives that were carried forward for analysis, as documented in Chapter IV, Environmental Consequences, and lists applicable laws and regulations used for the assessment. The alternatives analysis is consistent with the requirements of FAA Orders 1050.1E and 5050.4B, both of which provide environmental policies and procedures specific to FAA actions.

2.2 Alternatives Identification

In accordance with federal regulations, the following types of alternatives were considered in this EA: construction of a heliport at a site not currently developed for aviation uses, development of heliport facilities at existing aviation facilities in the Las Vegas region, and the use of other modes of transportation. The initial alternatives considered in this EA were identified from (1) the results of the Site Suitability Assessment [I-8], (2) the results of subsequent planning studies and analyses, and (3) a review of other means to potentially satisfy purpose and need, as required by NEPA. The No Action alternative was also considered, as required by federal regulations. The following sections provide a discussion of the identification of initial alternatives that were considered in this EA.

2.2.1 Alternatives Identified from the Site Suitability Assessment

In the Site Suitability Assessment, the CCDOA identified and assessed 13 candidate sites for the location of a heliport in terms of their ability to meet the statutory intent of the amendments to NRS 495 and the goals and objectives and facility requirements documented in the Needs Assessment [I-7]. The sites included in the Site Suitability Assessment represented both sites not currently developed for aviation uses and existing airport facilities (**Exhibit C-1 in Appendix C**). **Table C-1** of Appendix C provides a summary of the process and the results of the Site Suitability Assessment. On the basis of that assessment, three sites, including two sites not currently developed for aviation uses (Eldorado Valley/Boulder City and GoKart/Sloan) and one existing airport (Jean Airport), were selected as initial alternatives to be considered in this EA.

2.2.2 Alternatives Identified from Subsequent Planning Studies and Analysis

After the completion of the Site Suitability Assessment, the CCDOA further refined the project goals and objectives and heliport requirements through a series of planning studies (see Section 1.2). An additional site not currently developed for aviation uses, the South of Sloan site, was identified and assessed using the process set forth in the Site Suitability Assessment, as documented in the SOS Site Suitability Assessment [I-9]. The South of Sloan site was subsequently identified as the preferred location for construction of a heliport, and therefore was included as an initial alternative to be considered in this EA.

The Sunrise Landfill site was not recommended for further consideration in the Site Suitability Assessment due to the results of the drive time analysis and lack of accessibility from a major roadway. However, after review of new information obtained subsequent to the Site Suitability Assessment¹, it was determined that the Sunrise Landfill site should be included as an initial alternative to be considered in this EA. The reasons cited in the Site Suitability Assessment for not considering the other identified sites remain valid, and those sites were not included as initial alternatives to be considered in this EA.

2.2.3 Other Alternatives

In addition to Jean Airport and McCarran, four other existing airports² are in operation in the Las Vegas region and are included as initial alternatives to be considered in this EA. Those airports include Boulder City Municipal, Henderson Executive, Mesquite Municipal, and North Las Vegas airports.

As required by NEPA, other means to potentially satisfy the purpose and need, including the use of other modes of transportation were included as initial alternatives to be considered in this EA.

Prior to the State legislature amending NRS 495 and completion of subsequent planning studies that led to the proposal to construct the Heliport, the CCDOA, in conjunction with the FAA and helicopter operators, assessed multiple routing options as part of ongoing efforts to reduce overflights of residential areas. At that time, it was determined that no feasible flight corridors could be established that would reduce overflights of and the associated noise concerns in residential areas. Therefore, the modification of helicopter flight corridors was not identified as an initial alternative to be considered in this EA. The results of the assessment are documented in **Table C-2** and on **Exhibit C-3** in Appendix C.

¹ Sunrise Landfill was not a recommended site in the Site Suitability Assessment, because the drive time was over the maximum limit of 33 minutes. However, due to comments received during the EA scoping process, an additional drive-time analysis was performed using surface roads rather than freeways. The revised average drive time of 29 minutes marginally meets the drive time limit; therefore, this site was retained as an initial alternative to be considered in this EA.

² McCarran International and Henderson Executive Airports were both considered and eliminated in the Site Suitability Assessment. However, McCarran International and Henderson Executive Airports are considered as initial alternatives in this EA, because, notwithstanding the amendments to NRS 495, Grand Canyon helicopter air tour operators may choose to remain at McCarran or relocate to Henderson Executive. Henderson Executive Airport is included as a separate initial alternative and McCarran International Airport is included as part of the No Action alternative.

2.2.4 Summary of Alternatives Considered in this EA

On the basis of the analyses discussed in Sections 2.2.1, 2.2.2, and 2.2.3, a total of 11 initial alternatives, including the No Action alternative, were considered in this EA.

Table II-1 provides a summary of the initial alternatives considered in this EA. All of the initial alternatives were screened for their ability to reasonably satisfy the purpose and need and therefore be carried forward for analysis of environmental consequences. The initial alternatives subjected to this screening process include four sites not currently developed for aviation uses (South of Sloan, Eldorado Valley, GoKart/Sloan, and Sunrise Landfill); five existing facilities (Boulder City Municipal, Henderson Executive, Jean, Mesquite Municipal, and North Las Vegas Airports); the use of other modes of transportation; and the No Action alternative, which includes maintaining McCarran International Airport as the primary base of Grand Canyon helicopter air tour operations.

Table II-1

Initial Alternatives Considered in the Environmental Assessment

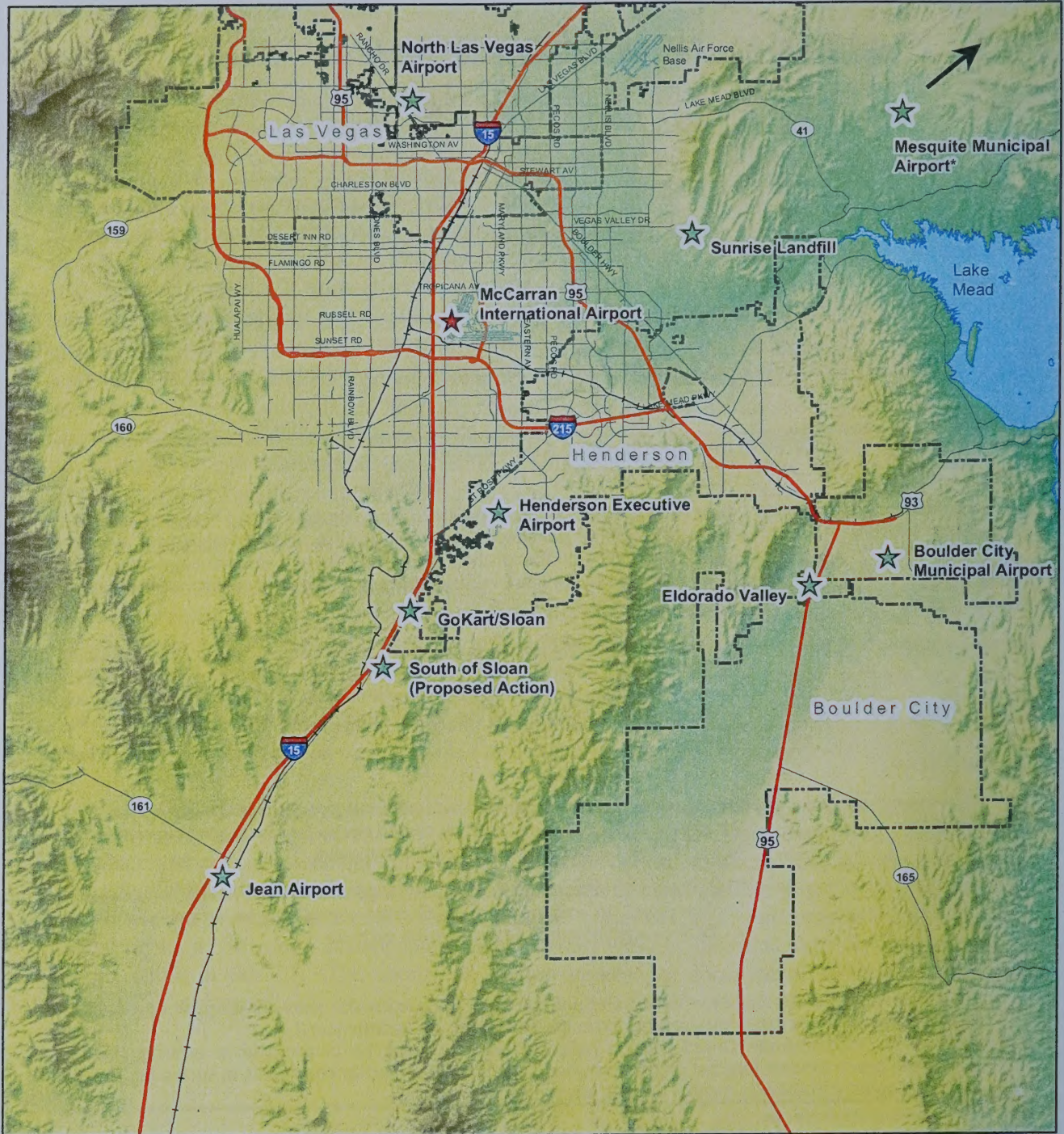
Alternatives	Description
Sites not currently developed for aviation uses: ^{1/}	As a build alternative, a new facility to accommodate Grand Canyon helicopter air tours would be constructed on a site not currently developed for aviation uses. Depending on the location of the potential site, infrastructure may need to be extended to the site to provide essential utilities, including electricity and water. New flight corridors would be in use.
South of Sloan, Eldorado Valley, GoKart/Sloan, and Sunrise Landfill	
Existing aviation facilities:	As a partial-build alternative, facilities would be constructed to accommodate Grand Canyon helicopter air tours at an existing aviation facility. Grand Canyon helicopter air tour operators would be able to relocate to an improved existing aviation facility in the Las Vegas region. New flight corridors would be in use.
Boulder City Municipal Airport, Henderson Executive Airport, Jean Airport, Mesquite Municipal Airport, and North Las Vegas Airport	
Use of other modes of transportation	Other modes of transportation would be considered to serve all or portions of the market historically and currently served by the Grand Canyon helicopter air tours. No new heliport facilities would be proposed. ^{2/}
No Action	The proposed Heliport and related utility extensions would not be constructed. Improvements to existing aviation facilities would not be proposed by the CCDOA to accommodate Grand Canyon air tours.

Notes:

- 1/ Brief descriptions of the Eldorado Valley, GoKart/Sloan and Sunrise Landfill sites are found in Appendix C. Further information on these sites is provided in the Site Suitability Assessment [I-8].
- 2/ Facilities to accommodate Grand Canyon helicopter air tours may be constructed at existing aviation facilities to accommodate forecast growth, provided that there are no facility constraints at such a facility and that development would occur within existing environmental approvals.

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc., April 2008

Exhibit II-1 depicts the locations of the initial alternatives considered in this EA that involve development of heliport facilities at sites not currently developed for aviation uses and existing aviation facilities.



★ Alternative heliport site

★ No action alternative

— Primary road

— Secondary road

— Railroad

— Jurisdictional boundary

* Mesquite Municipal Airport is located approximately 80 miles northeast of McCarran International Airport on the Nevada/Arizona border.

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., August 2007.
Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit II-1

0 6 miles
↑
north

Initial Alternative Sites Considered for Heliport

2.3 Alternatives Screening Criteria

The 11 initial EA alternatives were subjected to a three-level screening process to determine their ability to reasonably satisfy the purpose and need. Under the three-level screening process, once an alternative failed to meet a criterion, it was eliminated from further consideration and was not carried forward to the next level. Only those alternatives that were able to meet the criteria for all three levels were carried forward for analysis of environmental consequences in this EA. The screening process and criteria are described in this section.

2.3.1 Level 1: Consistency with Nevada Revised Statutes, Chapter 495 (NRS 495)

The initial alternatives were screened for specific siting requirements set forth in NRS 495, Sections 300-320 [I-4], which were established to address the need to reduce, as soon as practicable, helicopter tour overflights and resulting adverse noise impacts over residential areas of Clark County. Provided for reference in Appendix A, this statute required certain counties, including Clark County, to designate a preferred location for takeoff and landing of commercial helicopters that:

- is not the largest airport located within the County
- is not located within a residential area³
- is selected on the basis that the site location would reduce the overall impact of helicopter noise on the residents of the County and would reduce the risk of danger to county residents related to helicopter traffic

Any of the initial alternatives that did not meet each of these criteria were eliminated from further consideration.

2.3.2 Level 2: Consistency with the Airport System Plan

The CCDOA regularly updates its System Plan to provide a guiding framework to accommodate existing and forecast future aviation demand of which Grand Canyon helicopter air tours are just one element. This framework identifies the roles of existing and planned airports within the Southern Nevada Regional Airport System. By aligning the development of each individual facility with its identified role, the CCDOA can develop the System to meet the overall aviation needs of the region. The initial alternatives carried forward from Level 1 were screened for consistency with the goals and objectives and individual facility roles identified in the System Plan, in particular the need to preserve adequate space at McCarran to ensure that it can continue to serve its primary role and to preserve the roles of other airports in the region. Any of the alternatives that were not consistent with the System Plan were eliminated from further consideration.

2.3.3 Level 3: Ability to Accommodate Demand for Grand Canyon Helicopter Air Tours

Given the forecast growth in helicopter tours of the Grand Canyon, the initial alternatives carried forward from Level 1 and Level 2 were screened with regard to physical attributes and whether they would be viable alternatives for current and future Grand Canyon helicopter air tour operations. The specific screening factors included ground transportation (surface accessibility and drive time), layout (available land area and configuration), and operational and airspace considerations.

³ NRS 495 defines “residential area” as land that is “being used primarily for one- or two-family dwellings or apartments”, and land that is “located adjacent to or near other residentially used land.”

Surface accessibility and drive time are critical to the viability of Grand Canyon helicopter air tours, and therefore, to the ability to accommodate demand for such tours. Paragraph 1-7 (h) of FAA Order 5090.3C, *Field Formulation of The National Plan of Integrated Airport Systems (NPIAS)*, [II-2], in referring to the nation's airport system, states that the system should provide as many people as possible with convenient access to air transportation, typically not more than 20 miles travel to the nearest NPIAS airport. However, unlike a typical public use airport, the site for basing Grand Canyon helicopter air tours to serve Las Vegas must be located such that operators can provide drive times for limousines and buses providing ground access that are consistently low enough to preserve a viable tour operation. Conversations with the Grand Canyon helicopter air tour operators throughout the planning process resulted in the establishment of drive time criteria that would provide a viable operation. Thirty-three minutes to and from Caesars Palace on the Las Vegas strip was identified as the maximum drive time for purposes of this analysis. Surface access is an important consideration to ensure that the drive times can be kept as consistent as possible, and the CCDOA determined that imposing commercial traffic on residential streets for Grand Canyon helicopter air tour activity would not be acceptable. In addition to the physical attributes (e.g., size, ability to expand, terrain) the ability to establish and maintain air routes between the helicopter air tour basing facility and the Grand Canyon that avoid controlled airspace is also a critical screening criterion.

Any of the remaining alternatives that did not meet all of the aspects of accommodating demand were eliminated from further consideration and therefore not carried forward for an analysis of environmental consequences.

2.4 Alternatives Not Carried Forward for Analysis of Environmental Consequences

The results of the screening are presented in **Table II-2**. The screening results for the alternatives that were not carried forward for analysis of environmental consequences are summarized in this section.

2.4.1 Alternatives Involving Development of Heliport Facilities at a Site not Currently Developed for Aviation Uses

Of the four initial alternatives that involved development of heliport facilities at a site not currently developed for aviation uses, all four satisfied the Level 1 and Level 2 screening criteria. However, three of the alternatives did not meet one or more of the Level 3 criteria and were therefore not carried forward for analysis of environmental consequences.

Table II-2
Alternatives Screening Analysis Results

LEVEL	CATEGORY	CRITERIA	SITES NOT CURRENTLY DEVELOPED FOR AVIATION USES				EXISTING AVIATION FACILITIES					USE OF OTHER MODES OF TRANSPORTATION	NO ACTION ALTERNATIVE ^{5/}
			South of Sloan	GoKart/Sloan	Eldorado Valley ^{1/}	Sunrise Landfill ^{2/}	Boulder City Municipal Airport ^{3/}	Henderson Executive Airport ^{4/}	Jean Airport	Mesquite Municipal Airport ^{3/}	North Las Vegas Airport		
1. CONSISTENCY WITH NEVADA REVISED STATUTE, CHAPTER 495	NRS 495 ^{6/}	Not the Largest Airport in the County	●	●	●	●	●	●	●	●	●	●	x
		Not Within Residential Land Uses	●	●	●	●	x	x	●	x	x	●	x
		Reduction of Helicopter Noise to Clark County Residents	●	●	●	●	x	x	●	x	x	●	x
		Consistent with Purpose and Need?	yes	yes	yes	yes	no	no	yes	no	no	yes	
2. CONSISTENCY WITH SYSTEM PLAN	System Plan	System Plan Needs ^{7/}	●	●	●	●			x			●	x
		Consistent with Purpose and Need?	yes	yes	yes	yes			no			yes	
3. ABILITY TO ACCOMMODATE DEMAND FOR GRAND CANYON HELICOPTER AIR TOURS	Ground Transportation	Surface Accessibility ^{8/}	●	●	●	x						●	●
		Drive Time (minutes) ^{9/}	● (20.0)	● (17.6)	○ (33.0)	○ (29.0)						x	● (11.0) ^{10/}
		Consistent with Purpose and Need?	yes	yes	yes	no						no	
	Layout	Land Area (acres) ^{11/}	● (229)	x (49)	x (54)							x	x (9.1) ^{12/}
		Construction and Configuration ^{13/}	●	x	x							x	x
		Consistent with Purpose and Need?	yes	no	no	no						no	
	Airspace	Operational and Airspace Considerations ^{14/}	●									●	x
RETAIN FOR ENVIRONMENTAL ANALYSIS?			yes	no	no	no	no	no	no	no	no	no	yes

Notes:

- = Meets or exceeds criterion
- = Marginally meets criterion (not preferred)
- x = Does not meet criterion

1/ The Eldorado Valley site was relocated subsequent to the evaluation of the Eldorado Valley/Boulder City candidate site in the Site Suitability Assessment, due to comments received during the EA scoping process.

2/ The Sunrise Landfill site did not pass the drive time screening criterion in the Site Suitability Assessment; however, in response to comments received during the scoping process, the CCDOA re-evaluated the drive time assessment using a different routing that relied more on surface streets, allowing the drive time to be shorter than the 33-minute maximum drive time criterion.

3/ Airports that are not owned or operated by Clark County.

4/ Henderson Executive Airport was not identified as a suitable site in the Site Suitability Assessment. However, the Airport currently accommodates commercial tour operators and other helicopter operations. The CCDOA has limited authority to restrict helicopter operations at any public-use airports. Therefore, this airport was included in this evaluation.

5/ CEQ regulations [40 CFR 1502.14(d)] require evaluation of a no action alternative. Therefore, the No Action alternative was retained in this screening analysis and carried forward for analysis of environmental consequences. Under the No Action alternative, a non-urban heliport would not be constructed, helicopter air tour operations would continue to grow to meet demand, and helicopter air tour activity would continue to be accommodated at existing facilities, primarily at McCarran.

6/ Nevada Revised Statute, Chapter 495: The new facility (1) is not located at the largest airport in Clark County, (2) is not located within a residential area (e.g., existing residences are not located within one mile of the facility), and (3) reduces overall noise impacts on County residents. A residential area is defined as land that is (a) primarily used for one- or two-family dwelling or apartments, and (b) located adjacent to or near other residentially used land.

7/ System Plan needs: Consistency with the goals and objectives and facility roles established in the Southern Nevada Regional Airport System Plan Update.

8/ Surface accessibility: Ability for air tour operators to access the site within one mile or less from a primary roadway (i.e., interstate freeway or highway) and/or from a secondary roadway with minimal signalized intersections, without the use of surface and residential streets. Imposing regular use of residential streets by commercial traffic (air tour operators driving passengers to and from the heliport) would not be acceptable to the CCDOA.

9/ Drive time from customer base to the site should be up to 22 minutes (meets criterion) and a maximum of 33 minutes (marginally meets criterion). For purposes of this analysis, Caesars Palace was designated as the central location on the Las Vegas Strip.

10/ The drive time of 11 minutes is the travel time between Caesars Palace and McCarran, the facility from which helicopter air tour operators currently conduct Grand Canyon air tours. Under the No Action alternative, operators may relocate to other nondesignated aviation facilities in the Las Vegas region. The No Action drive time to the customer base will vary accordingly, depending on the location of the facility.

11/ Land area: Compared against facility requirements to accommodate forecast growth in operations, to accommodate 111 helicopter parking pads by 2017, and to be designed in accordance with FAA Advisory Circular (AC) 150/5390-2B [I-14]. A minimum of about 100 acres would be required for a new site.

12/ The land area noted refers to one of the existing facilities (McCarran) from which the helicopter air tour operators currently conduct Grand Canyon air tours. Given forecast growth in helicopter air tours and the limited expansion capability in and around McCarran, helicopter operators will likely expand and/or relocate to other facilities.

13/ Construction and configuration: The physical characteristics of a site would not result in constructability issues in the development of the facility, operational inefficiencies in the layout and use of the facility, or limitations on the ability to expand in the future.

14/ Operational and airspace considerations near or on the site, including: (1) potential flight corridors avoid controlled airspace; (2) relatively level terrain on and in the immediate vicinity of the site; (3) close-in airspace compatibility and imaginary surface and final approach/take off area siting requirements.

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., *Site Suitability Assessment for a Southern Nevada Regional Heliport*, December 2003; Ricondo & Associates, Inc., *Southern Nevada Regional Airport System Plan*, August 2001; HNTB Corporation, *Project Definition, Development and Operational Manual*, December 5, 2006.

Prepared by: Ricondo & Associates, Inc., April 2008

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The GoKart/Sloan and the Eldorado Valley site alternatives were eliminated in Level 3 screening, because the sites would not provide the available land area to accommodate parking positions for up to 111 helicopters within the 2017 planning horizon and the configuration of the available land area at both sites would limit expansion capability in the future^{4,5}. The Sunrise Landfill site alternative was eliminated in Level 3 screening, because surface accessibility to the site is poor and would result in the use of local surface streets, including residential streets, by commercial vehicles transporting tour passengers to the site. Further, it is anticipated, based on preliminary coordination with the FAA, that development on the landfill site would not be considered acceptable to the FAA, because of the potential to encounter solid and hazardous waste commonly associated with landfill sites.

Of the initial alternatives that included development of heliport facilities at a site not currently developed for aviation uses, only the South of Sloan site (the Heliport site) satisfied all of the Level 1, 2, and 3 screening criteria, and was therefore the only such alternative carried forward for evaluation of environmental consequences.

2.4.2 Alternatives Involving Development of Facilities at Existing Aviation Facilities

Of the five alternatives that involved development at existing aviation facilities, four did not meet the Level 1 screening criteria, and the fifth did not meet the Level 2 screening criteria.

The alternatives for development of facilities at Boulder City Municipal, Henderson Executive, Mesquite Municipal, and North Las Vegas Airports were eliminated in Level 1, because there are residential areas within one mile of each of the facilities and therefore, the alternatives would not meet the requirements for identifying a site that is not within a residential area. The alternative for development at Jean Airport met the Level 1 criteria, but was eliminated in Level 2, because the introduction of Grand Canyon helicopter air tour operations would not be consistent with the role of Jean Airport as defined in the System Plan. Jean Airport currently serves the role of accommodating aerobatic aircraft, glider, and ultralight flight operations in the region and would result in a mix of helicopter operations with aerobatic aircraft, glider, and ultralight flight operations within the airspace around the Airport. Even if the Jean Airport alternative satisfied the Level 2 criteria, it would be eliminated in Level 3, because the average drive time to Jean Airport from the Strip exceeds the 33-minute maximum drive time criterion. Therefore, none of the five initial alternatives that involved development at existing aviation facilities satisfied the screening criteria and none were carried forward for analysis of environmental consequences.⁶

2.4.3 Use of Other Modes of Transportation

Other modes of travel to Grand Canyon are already in use. Tours to and from the Grand Canyon from the Las Vegas region are provided via fixed-wing aircraft, bus, helicopter, and a combination of these modes. Visitors can also drive to the Grand Canyon using their own or rental vehicles.

⁴ Descriptions of the GoKart/Sloan and Eldorado Valley sites are provided in Appendix C, Section C.3. Further information on these sites is provided in the Site Suitability Assessment.

⁵ In the Site Suitability Assessment, a minimum of 40 acres was identified as the land area required for the heliport. However, during subsequent planning associated with the development of the PDDOM, it was determined that a minimum of 100 acres would be required to develop heliport facilities to accommodate up to 111 helicopter parking pads by 2017 in a configuration that would be viable for operation of the heliport facility.

⁶ As discussed in Chapter I, Purpose and Need, Clark County has limited authority to restrict helicopter operations at any public-use facilities that it owns and operates.

However, as described in Section 1.1, the Grand Canyon helicopter air tours provide a unique visitor experience unavailable via other modes of transportation.

Helicopters provide a different air tour experience compared to fixed-wing aircraft, which fly at higher altitudes, travel at higher speeds, cannot land safely without a runway, and are subject to restrictions regarding access to the area of the Grand Canyon subject to Special Federal Aviation Regulation No.50-2 [I-5].

According to the Grand Canyon helicopter air tour operators, tourists who choose helicopter tours do not want to devote more than about a half day to visit the Grand Canyon. Ground transportation modes typically require at least a full day of travel and therefore do not provide the Grand Canyon air tour experience in the relative short amount of time that can be provided by the helicopter air tour. Consequently, ground transportation is not considered a reasonable alternative to helicopter air tours.

While the use of other modes of transportation could be considered to satisfy the Level 1 and Level 2 criteria, it would not satisfy the Level 3 alternative as the type of demand that is accommodated by the Grand Canyon helicopter air tours would not be satisfied under the alternative of different modes of transportation for the same reasons that other alternatives did not meet the ground travel time criterion. The CCDOA can neither dictate market demand for the various sightseeing tour options nor cap or otherwise limit the number of Grand Canyon helicopter air tours. Therefore, the alternative of other modes of transportation was not carried forward for analysis of environmental consequences.

2.5 Alternatives Carried Forward for Analysis of Environmental Consequences

Based on the screening of the initial alternatives considered in this EA and described in Table II-2, one alternative could satisfy the purpose and need documented in this EA: construction of a heliport at the South of Sloan site. This alternative (the Proposed Action) and the No Action alternative were carried forward for analysis of environmental consequences.

2.5.1 Construction and Operation of a Heliport at the South of Sloan Site (Proposed Action)

The Proposed Action and associated analysis assumptions are described in the following paragraphs.

2.5.1.1 Description

The South of Sloan site is located east of Interstate 15 (I-15) and Las Vegas Boulevard South, about 5.5 miles south of St. Rose Parkway. As shown on **Exhibit II-2**, the site consists of about 229 acres and is undeveloped and clear of structures. The Heliport would be developed in phases to accommodate up to 111 based helicopters through 2017. The land north, south, and east of the site is currently undeveloped and the closest residence is about 3 miles to the northeast. The site is within unincorporated Clark County on public land managed by the BLM. Congress authorized the BLM to transfer the land to Clark County for the sole purpose of developing the Heliport (Public Law 109-115). The transfer of land ownership of a portion of Clark County's Assessor's parcel number 204-01-000-004 (229 acres) is part of the Proposed Action.



- | | | | | | | | |
|--|---|---|----------------|---|-------------------------|---|----------|
|  | Proposed heliport site area |  | Federal land |  | Primary road |  | Railroad |
|  | Bureau of Land Management Disposal Area Land Annexed by the City of Henderson in 2007 |  | Secondary road |  | Jurisdictional boundary | | |

Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph).
 Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit II-2

0 3,000 feet

 north

**Proposed Action:
 South of Sloan Site**

Project components are described in various planning studies listed in Section 1.2. Off-site components of the Proposed Action include improvements to and extension of utilities to the Heliport site. Based on the recommendations of a utility study commissioned by the CCDOA [II-3], and as described in Section 1.3, the Proposed Action would include development of utility infrastructure for water supply, waste water treatment, electric power, and communications.

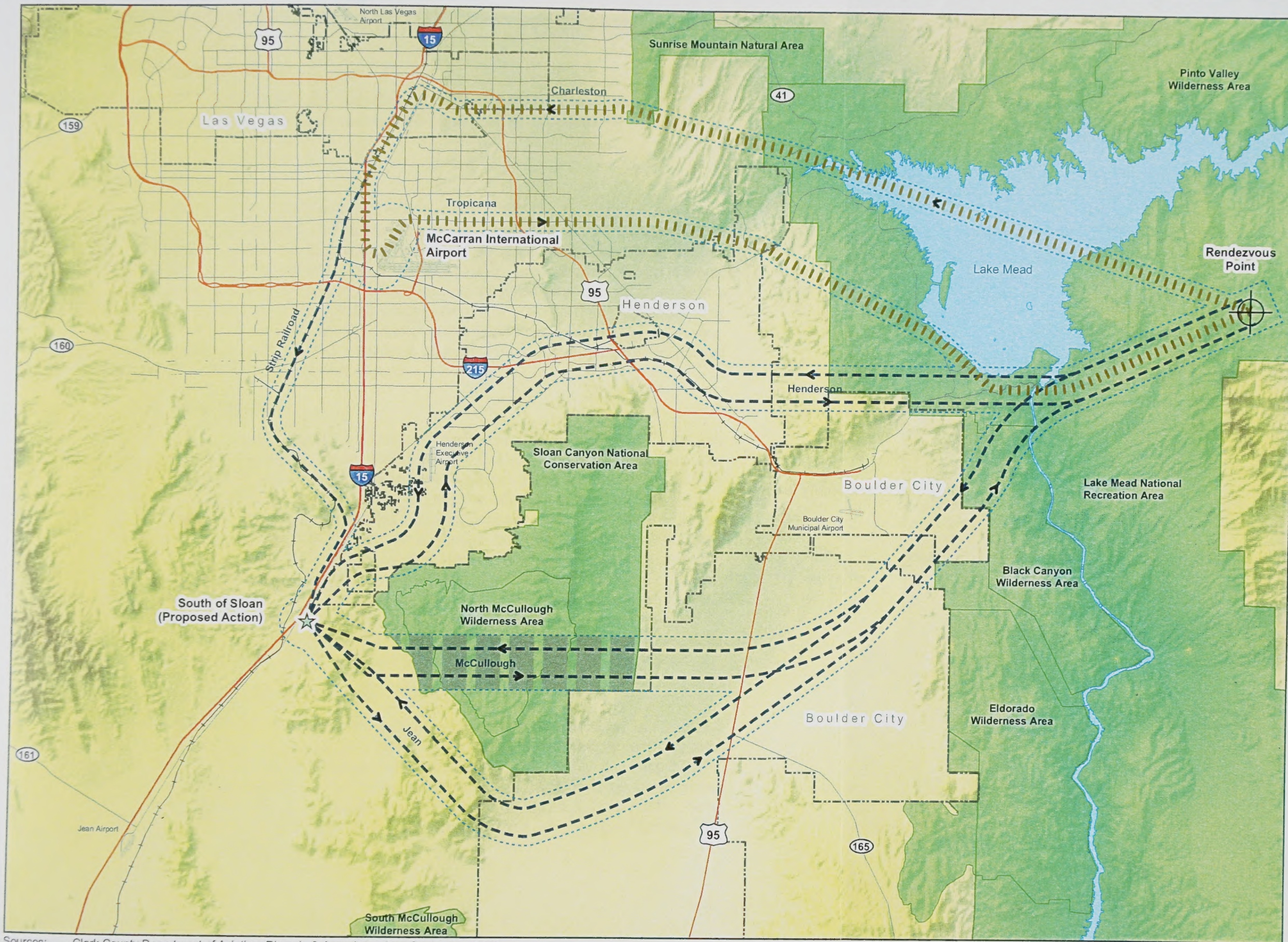
2.5.1.2 Analysis Assumptions

A number of operational assumptions are required for analysis of the potential environmental consequences of the Proposed Action. Although Grand Canyon helicopter air tour operators have stated their support for the construction and operation of the heliport at the South of Sloan site, it has been assumed that some number of Grand Canyon helicopter air tour operations would continue at McCarran even after the Heliport is constructed and operational. Continued activity at McCarran is not part of the Proposed Action, but rather a planning assumption reflecting the fact that CCDOA has limited ability to prevent an operator from maintaining its base at McCarran. For analysis purposes, it has been assumed that approximately 22 percent of the annual Grand Canyon tours would originate from McCarran. In addition, it was assumed that 10 percent of Grand Canyon helicopter operations currently or anticipated to originate from McCarran would instead occur at an aviation facility other than McCarran or the proposed Heliport site. Helicopter operations not bound for the Grand Canyon (i.e., news gathering, tours of the Las Vegas Strip, etc.) would not relocate to the Heliport site and would be based at McCarran and other locations in the urbanized portion of the Las Vegas Valley.

In Public Law 109-115, Section 180, Congress required that helicopter air tour operations originating or concluding at the Heliport that traverse the Sloan Canyon NCA must fly within a prescribed 2-mile wide, east-west corridor and fly above certain altitudes. The principal purpose of this provision is to protect sensitive resources within the Sloan Canyon NCA. Congress further authorized the FAA to promulgate rules and regulations as necessary to implement the prescribed corridors. It has been assumed for this EA that helicopter operations to and from the proposed Heliport site passing through the Sloan Canyon NCA would occur within this corridor, although neither the establishment nor implementation of the corridor is a component of the Proposed Action.

Further, the CCDOA consulted with the helicopter operators, the FAA, and other stakeholders to identify potential flight corridors associated with the Heliport site other than the Congressionally described flight corridor through the Sloan Canyon NCA. Grand Canyon tours originating from McCarran would follow established corridors⁷. Existing and potential flight corridors are shown on **Exhibit II-3**.

⁷ The helicopter air tour operators based at McCarran International Airport and the FAA have executed Letters of Agreement establishing preferred helicopter flight corridors for Grand Canyon helicopter tour operations originating at McCarran. These Letters of Agreement are intended to ensure safety, minimize noise levels in residential areas, and comply with FAA ATC guidelines while the helicopter operators are in controlled airspace. The potential helicopter flight corridors analyzed in this EA could be a guide for future Letters of Agreement between the helicopter operators and the FAA, although the Letters of Agreement would not be applicable outside of controlled airspace.



Legend

-  Proposed heliport site
- Helicopter flight corridors**
-  McCarran International Airport existing flight corridor to or from the Grand Canyon
 -  Potential flight corridor to and/or from the Grand Canyon
 -  Corridor boundary
 -  Direction of traffic
 -  Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area

Other features

-  Primary road  Secondary/State road
 Railroad  Jurisdictional boundary
 National Conservation Area, Wilderness Area,
 Natural Area, or National Recreation Area

Flight Corridor Identification

Charleston	Existing arrival flight corridor along Charleston Boulevard (39 miles to Rendezvous Point)
Tropicana	Existing departure flight corridor along Tropicana Avenue (34 miles from Rendezvous Point)
Henderson	South of Sloan potential flight corridor #1 (41 miles to/from Rendezvous Point)
McCullough	South of Sloan potential flight corridor #2 (40 miles to/from Rendezvous Point)
Jean	South of Sloan potential flight corridor #3 (45 miles to/from Rendezvous Point)
Strip Railroad	South of Sloan potential flight corridor #4 (at sunset only) (54 miles from Rendezvous Point)

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., September 2007.
Prepared by: Ricondo & Associates, Inc., August 2008.

0 4 miles 
north

Final EA for a Southern Nevada Regional Heliport Alternatives

Exhibit II-3

Assumed Flight Corridors under the Proposed Action

December 2008

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2.5.2 No Action Alternative

CEQ regulations 40 CFR 1502.14(d) require consideration and evaluation of a no action alternative. The No Action alternative and associated analysis assumptions are described in the following paragraphs.

2.5.2.1 Description

Under the No Action alternative, the Heliport would not be constructed. The No Action alternative is also distinguishable from partial-build alternatives that were eliminated from consideration of environmental consequences in this EA in that CCDOA would not proactively identify an existing facility and undertake a concerted effort to construct facilities to accommodate Grand Canyon helicopter air tours. Given the historical and forecast growth in helicopter tours, and without a designated facility for helicopter operations, Grand Canyon air tour helicopter flights would continue to occur, primarily at McCarran International Airport and would likely increase over urbanized areas. The CCDOA would continue to collaborate with helicopter operators to minimize overflights of residential areas in the region through voluntary measures.

2.5.2.2 Analysis Assumptions

Under the No Action alternative, in response to increasing demand (including that for helicopter air tour operations) and the facility constraints at McCarran, the Grand Canyon helicopter air tour operators based at McCarran may choose to relocate to other facilities. These facilities could include other airports owned and operated by Clark County, airports owned and operated by other public entities, or the expansion or development of private heliports/helipads throughout the Las Vegas region. Because the CCDOA would not proactively develop other facilities to accommodate Grand Canyon helicopter air tours under the No Action alternative, the details of such relocations cannot be predicted at this time. For analysis purposes, it is assumed that 32 percent of Grand Canyon helicopter operations currently or anticipated to originate from McCarran would occur at an aviation facility other than McCarran. Helicopter operations not bound for the Grand Canyon (i.e., news gathering, tours of the Las Vegas Strip, etc) would not relocate to the Heliport site and would be based at McCarran and other locations in the urbanized portion of the Las Vegas Valley.

2.5.3 Summary of Options Considered

As stated, the CCDOA has considered a wide range of options and developed a list of initial alternatives for this EA that were screened for their ability to reasonably satisfy the purpose and need as stated in Section 1.4 of this EA. **Exhibit II-4** provides a summary of the options considered in the various planning stages, the point in the process where the options were introduced, the point where certain options were eliminated, the initial alternatives considered in this EA, and finally those alternatives that meet the stated purpose and need and therefore have been carried forward for evaluation of environmental consequences in this EA.

Exhibit II-4

Summary of Options Considered

Option	Planning Phase during which Options were Introduced and Considered			
	Site Suitability Assessment	Subsequent Planning Studies	Environmental Assessment Identification and Screening of Initial Alternatives	Environmental Assessment Evaluation of Environmental Consequences
McCarran International Airport ^{1/}	X			
Henderson Executive Airport ^{2/}	X		X	
Jean Airport			X	
Blue Diamond/UPRR	X			
Decatur/Interstate 15	X			
Eldorado Valley/Boulder City			X	
GoKart/Sloan			X	
Railroad Pass-Site A	X			
Railroad Pass-Site B	X			
Silverbowl	X			
Silverton	X			
Sunrise Landfill ^{3/}	X		X	
Three Kids Mine	X			
South of Sloan (Proposed Action)				
Boulder City Municipal Airport ^{4/}			X	
Mesquite Municipal Airport ^{4/}			X	
North Las Vegas Airport ^{4/}			X	
Modification of Existing Corridors ^{5/}				
Use of other Modes			X	
No Action ^{1/}				

Notes:

- X Indicates that the option was eliminated at the conclusion of the planning phase; some options were reintroduced as initial EA alternatives
- 1/ McCarran International Airport was eliminated in the Site Suitability Assessment, but reintroduced during the EA alternatives screening as part of the No Action Alternative
- 2/ Henderson Executive Airport was eliminated in the Site Suitability Assessment, but reintroduced as an initial EA alternative to assess the potential use of existing aviation facilities
- 3/ The Sunrise Landfill option was eliminated in the Site Suitability Assessment, but reintroduced based upon input during the EA scoping and additional information regarding ground access
- 4/ Boulder City Municipal, Mesquite Municipal, and North Las Vegas Municipal Airports were introduced as initial EA alternatives to assess the potential use of existing aviation facilities
- 5/ Prior to the passage of amendments to NRS 495 and the initiation of the Site Suitability Assessment, the CCDOA, the FAA, and Grand Canyon helicopter air tour operators determined that no feasible alternative flight corridors existed that would effectively reduce overflights and the associated noise in residential areas

Sources: Ricondo & Associates, Inc., *Site Suitability Assessment for a Southern Nevada Regional Heliport*, December 2003; *Needs Assessment for a Southern Nevada Regional Heliport*, November 2003; *Supplemental Site Suitability Assessment of the South of Sloan Site*, April 2007.

Prepared by: Ricondo & Associates, Inc., April 2008

2.6 Summary of Environmental Impacts of the Alternatives Carried Forward for Analysis of Environmental Consequences

Table II-3 provides a summary of the potential environmental impacts of the Proposed Action and the No Action alternative. Documentation of the analyses is provided in Chapter IV, Environmental Consequences.

2.7 Permits Required

As required under FAA Order 1050.1E, paragraph 405d(4), a list of permits that would be required for implementation of the Proposed Action is provided in **Table II-4**. The list of applicable permits is preliminary, as this EA precedes detailed construction-related planning.

2.8 Listing of Federal Laws and Regulations Considered

In accordance with FAA Order 1050.1E, paragraph 405d(4), the relevant federal laws and statutes, Executive Orders, and regulations considered during preparation of this EA are listed in **Tables II-5, II-6, and II-7**, respectively.

Table II-3 (1 of 5)

Summary of the Anticipated Environmental Impacts of the Proposed Action and the No Action Alternative

Environmental Category ^{1/}	Proposed Action	No Action ^{2/}
Noise	No significant helicopter noise exposure at the Heliport site or at selected noise-sensitive locations within the Overflight Area. The number of helicopter overflights on existing flight corridors would be lower under the Proposed Action when compared to the No Action alternative.	No significant helicopter noise exposure at existing facilities at McCarran or at selected noise-sensitive locations within the Overflight Area. The number of overflights along the existing flight corridors would likely increase compared to existing conditions.
Compatible land use	The area around the Heliport site is currently vacant and planned as Open Space. Most properties surrounding the site are outside of the BLM disposal area and are publicly managed lands. Land use assurance from the County would prevent development of incompatible land uses. Potential flight corridors to and from the Heliport site would overfly existing residential land uses; however helicopter noise levels would be less than significant. The number of helicopter overflights on existing flight corridors would be lower under the Proposed Action when compared to the No Action alternative.	Existing flight corridors would continue to be used and areas developed with residential land uses and planned for residential land uses would experience helicopter overflights. The number of overflights along the existing flight corridors would not be reduced and would likely increase compared to existing conditions.
Socioeconomic impacts	No condemnation of any residences or other property would be required, as surrounding land is vacant; no disruptions to local employment or communities are anticipated.	No construction of heliport facilities or utilities would occur; no disruptions to local communities.

Table II-3 (2 of 5)

Summary of the Anticipated Environmental Impacts of the Proposed Action and the No Action Alternative

Environmental Category ^{1/}	Proposed Action	No Action ^{2/}
Environmental justice	Percentages of minorities and low-income families residing in the area immediately surrounding the Heliport site are lower than in Clark County as a whole. Pursuant to Executive Order 12898, there would be no disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. The number of helicopter overflights on existing flight corridors would be lower under the Proposed Action when compared to the No Action alternative	Percentages of minorities and low-income families are higher around McCarran than in Clark County as a whole. The number of overflights along the existing corridors would not be reduced and would likely increase compared to existing conditions.
Children's environmental health and safety risks	Land immediately surrounding the Heliport site is vacant and undeveloped. There are no residents 17 years of age and younger in the area. No adverse effects are anticipated. Existing flight corridors from McCarran could continue over existing and planned residential land uses, but the number of flights would be reduced.	The percentage of children residing in the vicinity of McCarran is lower than in Clark County as a whole. The number of overflights along the existing corridors would not be reduced and would likely increase.
Air Quality	Differences in construction equipment emissions and operational (helicopter) emissions under the Proposed Action when compared to the No Action alternative would be below applicable <i>de minimis</i> thresholds. Dispersion modeling revealed no increases or contributions that would exceed applicable NAAQS. Implementation of construction best management practices would reduce the potential for fugitive dust.	Emissions of ozone precursors (VOC and NO_x), CO, and PM₁₀ would be less than significant under the No Action alternative and pollutant concentrations in the vicinity of McCarran would not exceed the applicable NAAQS.
Areas of Critical Environmental Concern ^{3/}	No ACECs on Heliport site. Southern portion River Mountain and Rainbow Garden ACECs are located beneath potential flight corridors.	No ACECs on existing facilities. Northern portion River Mountain and Rainbow Garden ACECs are located beneath existing flight corridors.
U.S. Department of Transportation, Section 4(f) lands	No Section 4(f) lands on Heliport site; there would be no direct use of Section 4(f) lands. Potential flight corridors overfly recreation areas, parks, and NRHP-listed and eligible sites. However, noise analyses indicated that helicopter noise levels would be below significance thresholds. There would be no constructive use of Section 4(f) lands.	Existing flight corridors overfly recreation areas, parks, and NRHP-listed and eligible sites. The number of overflights along the existing corridors would not be reduced and would likely increase.

Table II-3 (3 of 5)

Summary of the Anticipated Environmental Impacts of the Proposed Action and the No Action Alternative

Environmental Category ^{1/}	Proposed Action	No Action ^{2/}
Historical, architectural, archaeological, and cultural resources	No NRHP-listed or eligible cultural resources were found on the Heliport site. Three NRHP-listed or eligible resources were found within the Area of Disturbance. The FAA has determined the proposed undertaking will not adversely affect any properties listed or eligible for listing on the NRHP. On May 13, 2008, the SHPO concurred with the FAA's determination that the proposed undertaking would not adversely affect historic properties with the avoidance and monitoring requirements outlined in the Cultural Report.^{4/} Potential and existing flight corridors overfly NRHP-listed or eligible sites. The Nevada SHPO identified four sites within the Sloan Canyon National Conservation Area as noise-sensitive sites to be considered in this EA. Based on the analysis presented in Section 4.7.2.3, no adverse effects on these four cultural resources would be anticipated as a result of the Proposed Action.	No NRHP-listed or eligible sites located on west side of McCarran. Existing flight corridors overfly NRHP-listed or eligible sites. The number of overflights along the existing corridors would not be reduced and would likely increase.
Native American religious concerns ^{3/}	See Department of Transportation, Section 4(f) Lands, for discussion of Native American religious concerns, as they pertain to management of religious resources within the Sloan Canyon National Conservation Area. Historic, Architectural, Archaeological, and Cultural Resources provides a discussion of the potential Native American concerns received through consultation with the federally recognized tribes and bands in the Las Vegas region.	No Native American religious concerns.
Wilderness ^{3/}	The Proposed Action would result in the introduction of new helicopter overflights and their associated noise within wilderness areas along the McCullough or Jean corridors. Estimated DNL noise exposure from the helicopter overflights at locations representative of the wilderness areas would be lower than ambient DNL values measured at the those same locations during the noise measurement period. Flights along the McCullough corridor over the North McCullough Wilderness Area would be limited to the two-mile wide corridor with the intent of protecting the most sensitive areas from helicopter overflights and their associated noise.	The number of overflights along the existing flight corridors would not be reduced and would likely increase compared to existing conditions.

Table II-3 (4 of 5)

Summary of the Anticipated Environmental Impacts of the Proposed Action and the No Action Alternative

Environmental Category ^{1/}	Proposed Action	No Action ^{2/}
Fish, wildlife, and plants	Adverse impacts would result from loss of vegetation and habitat on the Heliport site and within the utility extension corridor. However, such impacts would not be considered significant. Adverse impacts could be mitigated through implementation of construction best management practices, including those requested by the Nevada Department of Wildlife and detailed in the Biological Opinion issued by the USFWS (see Appendix I). Helicopter overflights are not likely to disturb wildlife within a majority of the habitat areas underneath the existing and potential flight corridors, but may disturb wildlife in specific locations, usually in areas of high terrain; however, no adverse effects are anticipated.	Grand Canyon helicopter air tour operators would continue to adhere to existing regional conservation plans, easements, and permits.
Federally listed threatened or endangered species	The desert tortoise, the only federally listed specie that occurs in the proposed project area, would be adversely impacted. Implementation of conservation measures, as detailed in the Biological Opinion issued by the USFWS (see Appendix I), would minimize impacts to the desert tortoise. No other federally listed species or habitats were identified in the proposed project area.	Helicopter air tour operators would continue to adhere to existing regional conservation plans, easements, and permits.
Invasive, nonnative species ^{3/}	None found on Heliport site and on utility corridors. Potential spread of noxious weeds common to the Las Vegas region during construction activities would be minimized through adherence of federal, State, and local guidance. Adherence to BLM-approved Integrated Weed Management Program during construction could minimize the potential spread of invasive, nonnative species.	No disturbance and associated potential for the spread of noxious weeds.
Floodplains and floodways	Heliport site is not located in a 100-year floodplain. Portions of communication line corridor located within 100-year floodplain but would not adversely impact floodplain.	Existing heliport facilities are not within a 100-year floodplain.
Water quality	No significant impacts are anticipated, but construction of approved waste treatment facilities would be needed.	Helicopter air tour operators would use existing water supply and stormwater drainage systems, as well as wastewater treatment facilities.
Hazardous materials, pollution prevention, and solid waste	Potential lead contamination around informal shooting ranges located on the southern edge of Heliport site; no recognized environmental conditions exist within the utility corridors. Air tour operators would continue to abide by existing permits and facility regulations to handle generated waste.	Air tour operators would continue to abide by existing permits and facility regulations to handle generated waste.

Table II-3 (5 of 5)

Summary of the Anticipated Environmental Impacts of the Proposed Action and the No Action Alternative

Environmental Category ^{1/}	Proposed Action	No Action ^{2/}
Light emissions	Light emissions would either be localized to the site or would occur at sufficient altitude so as not to cause adverse impacts beneath the helicopter flight corridors. There are no homes or businesses in the vicinity; no adverse impacts to existing land uses or the aesthetics of the area are anticipated.	There would be no installation of additional navigational lighting systems. Light emissions from helicopter operations would be perceived by the community in the same way as they are today.
Visual resources	The proposed heliport would result in a visual contrast that attracts the attention of people traveling along Las Vegas Boulevard South and I-15, but would not dominate the view of the casual observer. Indirect impacts to scenic quality would result from the regular presence of vehicles and helicopters.	Visually, the west side of McCarran would be perceived by the community in the same way as they are today.
Natural resources and energy supply	Helicopter and automobile fuel consumption would increase but would not adversely impact regional supply of natural resources and energy supply.	Energy and natural resource consumption would continue to increase in proportion to future increases in demand.
Secondary (induced) impacts	No substantial shifts in population movement and growth or changes in business and economic activity are anticipated as a result of developing the Heliport; provision of utilities to the Heliport site would not result in development in surround areas as most of the land is managed by BLM.	Helicopter air tour operators would continue to operate at McCarran.
Construction impacts	Potential temporary increases in fugitive dust emissions during construction; potential for hazardous material spills. Potential construction-related impacts could be lessened through implementation of construction best management practices.	No construction related activity or associated impacts.

Notes:

- 1/ The following resource categories are not present on or near the Heliport site: coastal resources, farmlands, wetlands, and wild and scenic rivers.
- 2/ Under the No Action alternative, the Heliport and related utility extensions would not be constructed. Grand Canyon helicopter air tour operators would continue to be based primarily at McCarran International Airport. For the purposes of the analysis of environmental consequences in this EA, it was assumed that existing and future demand for Grand Canyon helicopter air tours would continue to be accommodated at McCarran.
- 3/ Environmental resource category is from the BLM's *NEPA Handbook H-1790-1* [I-3].
- 4/ SWCA Environmental Consultants. *A Cultural Resource Inventory of the Southern Nevada Regional Heliport Utility Corridor, Clark County, Nevada*. August 6, 2007

Source: Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., December 2008

Table II-4

Preliminary List of Permits Required for the Proposed Action

Issuing Agency	Permit Name/Type
Clark County, Department of Air Quality and Environmental Management	Authority to Construct Application (ATC) Dust control permit Gasoline dispensing facility permit Emergency generators/underground storage tanks permit Application for an Authority to Construct Certificate - Nonmajor Soil and Groundwater Remediation Systems
Clark County Department of Development Services	Building permit Electrical permit, mechanical permit, plumbing permit Drainage study approval Pad certification for grading and earthwork Landscape certification for grading and earthwork Grading permit Fence permit Sign permit
Clark County Department of Comprehensive Planning	Land use application Land use presubmittal form (regional significance) Overhead utility permit Zoning review
Clark County Fire Department	Buried fuel tank storage permit (for emergency generator) Above-ground generator permit
Clark County Water Reclamation District	Sewer permit Encroachment permit (discharge water)
Federal Aviation Administration	Form 7460-1, "Notice of Proposed Construction or Alteration" Form 7580-1 "Activation of new airport" Form 7480-1 "Notice of Landing Area Proposal"
Nevada State Permits	Nevada Division of Wildlife scientific collection permit NPDES general storm water permit for construction Hazardous material permit or roving permit Clean Water Act Section 401 water quality certification Storm water discharge permit NPDES temporary discharge permit
Federal Permits	Bureau of Land Management right-of-way grant NPDES general storm water permit for construction
Utility Services Coordination	Nevada Power Sprint Cox Communications of Nevada Southern Nevada Water Authority Las Vegas Valley Water District
U.S. Fish and Wildlife Service	Incidental take permit

Note:

NPDES = National Pollutant Discharge Elimination System

Source: Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., April 2008

Table II-5

List of Considered Federal Laws and Statutes

	Citation
<i>National Environmental Policy Act of 1969</i>	Public Law 91-190, 42 U.S.C. §§ 4321-4370d, effective January 1, 1970, as last amended by Public Law 94-83.
<i>Southern Nevada Public Land Management Act of 1998</i>	Public Law. 105-263, 31 U.S.C. § 6901
<i>Clark County Conservation of Public Land and Natural Resources Act of 2002</i>	Public Law 107-282
<i>Sloan Canyon National Conservation Area</i>	Public Law 107-282 Title IV
<i>Clean Air Act of 1970, as amended</i>	Public Law 91-604, 42 U.S.C. §§ 7401-7671
<i>Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act of 2006. Public Law 109-115, Sec. 180. November 30, 2005.</i>	Public Law 109-115; H.R. Rep. No. 108-741 (2004); Cong. Rec. H3716 (May 23, 2005) (introduction in House); Cong. Rec. S1540 (introduction in Senate)
<i>Department of Transportation Act of 1966, Section 4(f)</i>	49 U.S.C. §303(c)
<i>Aviation Safety and Noise Abatement Act of 1979</i>	14 CFR 150
<i>Federal Aviation Act of 1958, as amended</i>	49 U.S.C. § 40101 et seq.
<i>Endangered Species Act of 1973</i>	Public Law 93-205, 16 U.S.C. § 1531 et seq.
<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Community Environmental Response Facilitation Act of 1992</i>	42 U.S.C. §§ 6901-9675
<i>Resource Conservation and Recovery Act of 1976, as amended by the Solid Waste Disposal Act of 1980</i>	42 U.S.C. §§ 6901-6992(k)
<i>National Historic Preservation Act of 1966, as amended</i>	16 U.S.C. § 470
<i>Archaeological and Historic Preservation Act of 1974, as amended</i>	16 U.S.C. § 469 et seq.
<i>Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act</i>	33 U.S.C § 1251 et seq.
<i>U.S. EPA. Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Las Vegas, NV Nonattainment Area</i>	96 FR 55956 Number 117
<i>Advisory Council on Historic Preservation. Protection of Historic and Cultural Properties</i>	36 CFR 800
<i>U.S. Congress. Enabling Legislation; Lake Mead National Recreation Area</i>	Public Law 88-639
<i>Federal Noxious Weed Act</i>	7 U.S.C. §§ 2801-2814
<i>Wilderness Act of 1964</i>	16 U.S.C. §§ 1131-1136
<i>American Indian Religious Freedom Act of 1978</i>	Public Law 103-344
<i>Federal Land Policy and Management Act of 1976</i>	43 U.S.C. § 1701 et seq.
<i>U.S. Fish and Wildlife Service. Desert Tortoise (Mojave Population) Recovery Plan. 1994.</i>	

Notes:

CFR = Code of Federal Regulations

FR = Federal Register

U.S.C. = United States Code

Sources: Ricondo & Associates, Inc., based on various federal laws and statutes, as cited above.

Prepared by: Ricondo & Associates, Inc., April 2008

Table II-6

List of Considered Executive Orders

	Citation
EO 11988, <i>Floodplain Management</i>	43 FR 6030
EO 13123, <i>Greening the Government through Efficient Energy Management</i>	64 FR 30851
EO 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i>	59 FR 7629
EO 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i>	62 FR 19883
EO 13007, <i>Indian Sacred Sites</i>	61 FR 26771
EO 13112, <i>Invasive Species</i>	64 FR 6183

Notes:

EO = Executive Order

FR = Federal Register

Sources: Ricondo & Associates, Inc., based on various Executive Orders, as cited above.

Prepared by: Ricondo & Associates, Inc., April 2008

Table II-7

List of Considered FAA Orders, Advisory Circulars, Code of Federal Regulations, and Other Guidance

FAA Order 1050.1E: *Environmental Impacts: Policies and Procedures*

FAA Order 5050.4B: *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*

U.S. Department of the Interior. Bureau of Land Management. *National Environmental Policy Act Handbook* H1790-1

U.S. Department of the Interior. Bureau of Land Management. Visual Resource Management (VRM) 8400 series manuals

U.S. DOT Order 5680.1: *Final Order to Address Environmental Justice in Low-Income and Minority Populations*

U.S. DOT. FAA. AC 150/5020-1: *Noise Control and Compatibility Planning for Airports*

U.S. DOT Order 5650.2: *Floodplain Management and Protection*

U.S. DOT. FAA. AC 150/5200-33A: *Hazardous Wildlife Attractants on or near Airports*

U.S. DOT. FAA. AC 150/5020-2: *Noise Assessment Guidelines for New Heliports*

U.S. DOT. FAA. AC 36-3H: *Estimated Airplane Noise Levels in A-Weighted Decibels*

U.S. DOT. FAA 14 CFR Part 91, Special Federal Aviation Regulation (SFAR) No. 50-2—*Special Flight Rules in the Vicinity of the Grand Canyon National Park, AZ*

U.S. DOT. FAA. 14 CFR Part 135: *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft*

U.S. DOT. FAA. 14 CFR Part 71: *Designation of Class A, Class B, Class C, Class D, and Class E Airspace Areas; Airways; Routes; and Reporting Points*

U.S. DOT. FAA. 14 CFR Part 135: *Operating Requirements: Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft*

U.S. DOT. FAA. AC 150/5390-2B: *Heliport Design*

Notes:

AC = Advisory Circular

CFR = Code of Federal Regulations

Sources: Ricondo & Associates, Inc., based on various FAA Orders, Advisory Circulars, and Code of Federal Regulations, as cited above.

Prepared by: Ricondo & Associates, Inc., April 2008

III. Affected Environment

3.1 Introduction

This chapter provides a description of the manmade and natural environments on and near the existing helicopter air tour facilities at McCarran International Airport and the proposed Heliport site. The “existing condition” year for this analysis is 2004 to be consistent with the *LAS FAR Part 150 Noise Compatibility Study Update* [III-1]. When available, historical data for 2005 and/or 2006 are also provided in this chapter.

This chapter also describes the existing conditions for environmental resource categories, as described in FAA Order 1050.1E, paragraph 403 and Order 5050.4B, paragraph 706, that are applicable to the study areas. These resource categories include:

- Noise
- Compatible land use
- Demographics and socioeconomic profile
- Air quality
- Department of Transportation, Section 4(f) lands, wilderness, and Areas of critical environmental concern¹
- Historic, architectural, archaeological, and cultural resources and Native American religious concerns¹
- Fish, wildlife, and plants and invasive, nonnative species¹
- Federally listed threatened and endangered species
- Floodplains and floodways
- Water quality
- Hazardous materials, pollution prevention, and solid waste
- Visual resources²

The following environmental resources are not present within the study areas (see Section 3.2) and therefore, would not be affected by the Proposed Action or the No Action alternative: wetlands, coastal resources, wild and scenic rivers, farmlands, and wild horses and burros. Chapter IV, Environmental Consequences, describes the potential and specific environmental effects of the alternatives selected for detailed evaluation, as set forth in Chapter II, Alternatives.

3.2 Study Areas

Three study areas were developed for this EA to describe the existing conditions in the Las Vegas region and to consider the potential direct and indirect impacts of the Proposed Action and the No Action alternative: Area of Disturbance, Overflight Area, and the Las Vegas region.

3.2.1 Area of Disturbance

The Area of Disturbance includes land within the Heliport site boundary (about 229 acres of land) and areas that would be affected by the extension of electrical power, water, and communication utilities to the site (see **Exhibit III-1**).

¹ “Critical Elements of the Human Environment”, as listed in Appendix 5 of the BLM’s *NEPA Handbook H-1790-1*.

² Visual resources, as detailed in the BLM’s Visual Resource Management (VRM) 8400 series manuals. See Section 3.16.

The proposed utility corridor is located south of St Rose Parkway and north of Jean, Nevada, and generally parallels I-15 and Las Vegas Boulevard South. Utilities to be installed or improved within the corridor include above-ground and underground power lines, an underground communication line, and an underground water pipeline. (See Section 1.3 for a description of the Proposed Action.) For purposes of analysis in this EA, a 200-foot wide utility corridor was assumed as part of the Area of Disturbance, except for a portion adjacent to and west of the Heliport site for which a 400 foot wide corridor was assumed. The permanent right-of-way, which would be located within the assumed 200-foot wide corridor, would be a maximum of 50 feet in width for each utility line; an additional 50-foot wide temporary right-of-way for construction would also be required.

3.2.2 Overflight Area

The Overflight Area includes (1) a one-mile radius around the proposed Heliport site and the west side of McCarran International Airport where existing helicopter tour facilities are located; (2) the existing Grand Canyon helicopter air tour flight corridors; and (3) three potential flight corridors³ analyzed as part of the Proposed Action.

The boundary of the Overflight Area, which is defined by the location of existing helicopter flight corridors and potential helicopter flight corridors, is depicted on **Exhibit III-2**. As shown on Exhibit III-2, the eastern boundary of the Overflight Area is the Rendezvous Point, beyond which the flight corridors to and from the Grand Canyon would remain unchanged.

3.2.3 Las Vegas Region

The Las Vegas region includes Clark County as a whole. The discussions on noise, air quality, demographics and socioeconomic profile include a discussion of the existing condition within Clark County. Department of Transportation, Section 4(f) lands include discussion of the existing condition in the Las Vegas region as a whole.

3.3 Historical and Forecast Helicopter Air Tour Demand

This section provides a summary of the historical and forecast helicopter air tour demand, as documented in the Heliport Forecasts [I-12].

3.3.1 Historical Helicopter Air Tour Demand

The helicopter air tour industry in Southern Nevada has grown over the past several years. According to statistics produced using AirScene data, Grand Canyon helicopter air tour activity at McCarran increased an average of 20.7 percent per year between 2001 and 2004. In comparison,

³ The CCDOA consulted with the helicopter operators, the FAA, and other stakeholders to identify potential flight corridors associated with the Heliport site. In accordance with Public Law 109-115 the McCullough flight corridor represents the only route that can be used by Grand Canyon helicopter tour operators to cross the Sloan Canyon NCA if the flight is starting from or ending at the Heliport site. Because neither the CCDOA nor the FAA has the authority to mandate flight corridors or the use of those corridors in uncontrolled airspace, the flight corridors depicted in the Draft EA are intended to be illustrative of where Grand Canyon helicopters would fly under the Proposed Action and No Action alternatives and are the best available for analysis purposes. The Proposed Action does not include any proposal to establish or implement mandatory flight corridors.



Legend

- Proposed heliport site area
 - Area of disturbance
 - National Conservation Area or Wilderness Area
 - Primary road
 - Secondary/State road
 - Railroad
 - Jurisdictional boundary
- Note: The area of disturbance includes areas that could be affected by construction or the extension of utilities to the site.

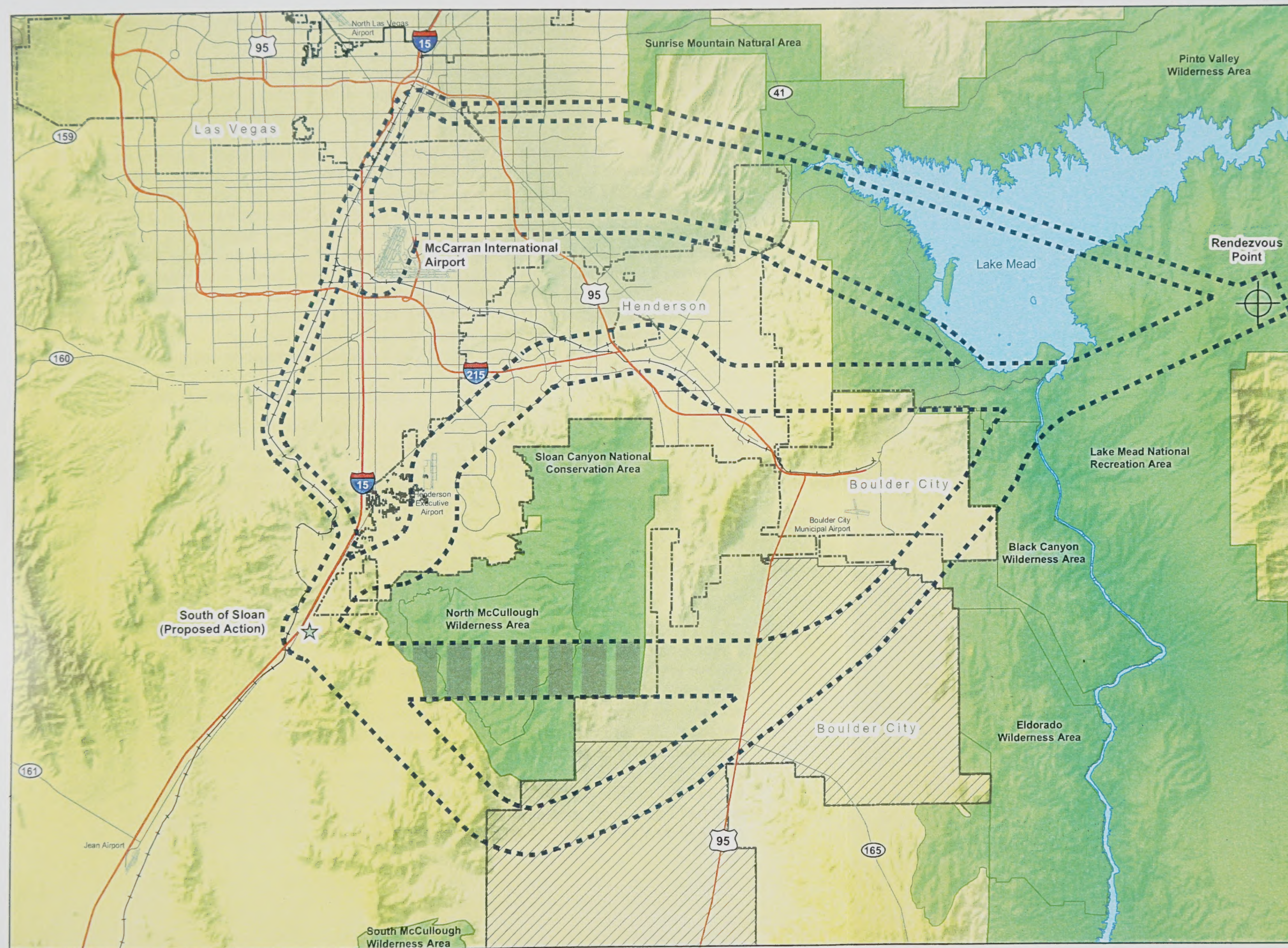
Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph); SWCA Environmental Consultants (area of disturbance).
Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit III-1

0 7,000 feet
north

Area of Disturbance

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Legend

- ★ Proposed heliport site
- Primary road — Secondary/State road
- +— Railroad - - - Jurisdictional boundary
- ⬡ Overflight area
- National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area
- ▨ Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area
- ▨ Boulder City conservation easement

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., August 2007.
 Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit III-2

0 4 miles
 north

Overflight Area

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total air carrier aircraft operations at McCarran increased an average of 4.3 percent per year over the same period. Helicopter air tour activity to the Grand Canyon has, therefore, increased at a higher rate than air carrier aircraft operations in the region in recent years.

In 2004, annual helicopter departures totaled 33,190 Grand Canyon tours and 11,501 Las Vegas Strip tours. In 2005, annual helicopter departures totaled 37,595 Grand Canyon tours and 12,775 Las Vegas Strip tours. In 2006, annual helicopter departures totaled 36,865 Grand Canyon tours and 12,045 Las Vegas Strip tours. Assuming a load of 5.5 enplaned passengers per helicopter departure based on the helicopter fleet mix, air tour helicopters carried about 182,550 passengers on tours of the Grand Canyon and about 63,260 passengers on tours of the Las Vegas Strip and in 2004. In 2005, air tour helicopters carried about 206,772 passengers on tours of the Grand Canyon and about 70,262 passengers on tours of the Las Vegas Strip. In 2006, air tour helicopters carried about 202,757 passengers on tours of the Grand Canyon and about 66,247 passengers on tours of the Las Vegas Strip. The actual 2006 Grand Canyon annual tour departures are within about three percent of the number of departures forecasted in 2004 for 2006.

3.3.2 Current Helicopter Tour Operators

As of 2007, four commercial helicopter operators provided helicopter air tours from their base at McCarran. A fifth commercial helicopter operator, offering helicopter training and local tours, is partially based at North Las Vegas Airport. Helicopter tours are also conducted at the Boulder City Municipal Airport by an operator who is also based at McCarran. Multiple sites on the west side of McCarran are currently used as bases for the four helicopter tour operators operating at McCarran. These helicopter facilities are located about two miles south of Caesars Palace, a location that is considered the center of the helicopter air tour customer base. Additional helicopters used for television news gathering, fire fighting, and executive charter flights are also based at McCarran and at other airports and private heliports located throughout the Las Vegas region.

3.3.3 Forecast Helicopter Air Tour Demand

Unconstrained forecasts of helicopter air tour passengers and operations in the Las Vegas region were approved in 2007 and are described in the Heliport Forecasts [I-12]. Helicopter tour activity based at McCarran in 2004 was used as the existing condition in the forecasts. **Table III-1** summarizes the forecast of helicopter air tour departures as derived from the Heliport Forecasts. An unconstrained growth rate of 4.0 percent per year is forecast through the planning period. As shown in Table III-1, based on the forecast growth rate, the number of Grand Canyon air tour departures is forecast to increase from about 33,190 in 2004 to 43,700 in 2011 and 55,200 in 2017. Daily departures for Grand Canyon air tours are forecast to increase from an average of 91 in 2004 to 120 in 2011 and 151 in 2017. The total number of helicopter air tour departures, including Las Vegas Strip tour departures, is forecast to increase from 44,692 in 2004 to 58,900 in 2011 and 74,400 in 2017.

Table III-1

Forecast of Helicopter Air Tour Departures

Year	Las Vegas Strip Tours		Grand Canyon Tours		Total Tour Departures	
	Annual	Daily	Annual	Daily	Annual	Daily
Historical						
2004	11,501	32	33,190	91	44,692	122
2005	12,775	35	37,595	103	50,370	138
2006	12,045	33	36,865	101	48,910	134
Forecast						
2011	15,200	41	43,700	120	58,900	161
2017	19,200	53	55,200	151	74,400	204

Notes:

Columns may not add to totals shown because of rounding.

Forecasts are intended to represent general trends; therefore, some air tour departures reported in this table shows faster historical growth while other years show slower growth.

Sources: Clark County Department of Aviation, using data from AirScene (2004-2006 departures); Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., April 2008

3.4 Physical Setting and Resources

The natural environment in the Las Vegas region, including the climate, topography and drainage, soils, and mineral resources and mining, is described below.

3.4.1 Climate

The Las Vegas region has a warm climate, with an average annual temperature of 75 degrees Fahrenheit. The four seasons are well defined. In summer, the region experiences daytime maximum temperatures usually averaging about 100 degrees Fahrenheit with extreme summertime temperatures reaching 115 degrees Fahrenheit and higher on some occasions. The proximity of the mountains contributes to relatively cool summer nights with average temperatures in the mid 70s. Winter temperatures are generally mild, with the temperature dropping below freezing about 12 days per year. Daytime winter temperatures average near 60 degrees Fahrenheit with mostly clear skies. The spring and fall seasons are generally considered the most ideal, with average daily temperatures about 80 degrees Fahrenheit, although rather extreme temperature changes can occur during these months.

The Sierra Nevada Mountains of California and the Spring Mountains immediately west of the Las Vegas Valley, the latter rising to elevations over 10,000 feet above the Valley floor, act as effective barriers to moisture moving eastward from the Pacific Ocean. These barriers primarily result in a minimum of overcast and rainy days. The numbers of rainy days during a given month in the region can vary from less than one rainy day in June to three days during the winter months. Humidity is normally low, averaging 30 percent, but moist tropical air from the southwest affects the region from mid- to late summer months.

3.4.2 Topography and Drainage

Clark County is within the Basin and Range Physiographic Province. The topography of this Province is one of marked relief, with low-lying valley floors surrounded by steeply rising mountain ranges. Topography divides Nevada into a number of generally closed drainage basins. Both the

Heliport site and McCarran lie in the Las Vegas Valley hydrographic area. (See Section 3.8.2 for a discussion of Hydrographic Area 212, the Las Vegas Valley hydrographic area.)

Portions of the Heliport site and areas to the east are hilly. The elevation of the Heliport site ranges from a low of about 3,000 feet above mean sea level (MSL) on the western side of the site to a high of about 3,340 feet above MSL in the southeastern corner of the site. Drainage on the site flows northwesterly. Major washes cross the southern third of the site and the southwestern tip of the site.

3.4.3 Mineral Resources and Mining

According to a database of mining claims⁴ maintained by the BLM, there are 12 mill site claims (“Apple Rose 6” through “Apple Rose 17” inclusive) that are on or partially on the Heliport site. No development or work has occurred on any of these mill site claims and no plans of operations have been submitted to or approved by BLM for any of them. Each of the 12 mill site claims is partially or totally within the proposed Transportation and Utility Corridor that was withdrawn from location and entry under the mining laws by the action of the BLM dated July 2, 2007, pursuant to section 501(b) of P.L. 107-282, the *Clark County Conservation of Public Land and Natural Resources Act of 2002* [III-2].

There are no active mining claims within the Heliport site. Two mining claims of approximately 20 acres each (“QU #15” and “QU #29”) in the same section as the Heliport site have been closed.

Just north of the Heliport site, the BLM database shows four active mining claims. Just south of the Heliport site, the BLM database shows two active mining claims. No other mining claims were found in the BLM database. The Clark County Assessor’s Office database of land ownership records does not show private holdings (or patented mining claims) near the Heliport site.

Gravel was once mined from small pits to the south of the Heliport site and just west of the southern half of the site in the small wash that drains west-northwest; however no potentially significant mining material was found near the site.

Part of the southwest corner of Heliport site (less than 10 acres) is utilized by the Nevada Department of Transportation (NDOT) as a material site⁵ to extract gravel for regional transportation projects.

3.5 Noise

In accordance with FAA Orders 5050.4B and 1050.1E, aircraft noise exposure in the vicinity of McCarran International Airport and the Heliport site was analyzed for existing (2004) and future (2011 and 2017) conditions. Total aircraft noise exposure contours and helicopter noise exposure contours for existing (2004) conditions at McCarran are discussed in Section 3.5.1 below. Existing noise levels at the Heliport site and at other locations of interest within the Overflight Area are described in Section 3.5.2. A discussion of the noise analysis techniques, methodology, and assumptions used for the existing and future year noise analysis is provided in **Appendix D**.

⁴ The BLM maintains an online database of mining claims, listed by quarter section. The claims in the database are unpatented mining claims; that is, no private land ownership is associated with the claims.

⁵ NDOT site NEV044285 is used to extract gravel for regional transportation projects.

The primary metric used in the noise analysis is the day-night average sound level (DNL), which is the average sound pressure level in A-weighted decibels (dBA) for an average day of the year.⁶ (See Appendix D for further details.) DNL is calculated using the sound energy generated by individual aircraft operations (arrivals or departures), the number of operations occurring during a theoretical average 24-hour period, and the times of day the operations occur. A 10-decibel (dB) weighting penalty is added for aircraft operations occurring during nighttime hours (between 10:00 p.m. and 6:59 a.m.). The 10-dB penalty represents the added intrusiveness of sounds that occur during sleeping hours, both because of the increased sensitivity to noise during sleep, and because ambient sound levels during nighttime hours are typically about 10 dB lower than during daytime hours. With the penalty, each operation during nighttime hours is considered to be equivalent to 10 operations of the same aircraft type during daytime hours (between 7:00 a.m. and 9:59 p.m.).

The FAA's Integrated Noise Model (INM), Version 6.1, was used to evaluate total aircraft noise exposure at McCarran International Airport.⁷ INM Version 7.0, the most current version of the INM at the time this EA was prepared, was used for the helicopter noise exposure analysis documented in this EA.

The INM produces noise exposure contours, which are computer-generated drawings that depict areas of equal noise exposure resulting from aircraft overflights. Four specific ranges of noise exposure were estimated in the total aircraft noise analysis: (1) DNL 75 and higher, (2) DNL 70 to 75, (3) DNL 65 to 70, and (4) DNL 60 to 65.

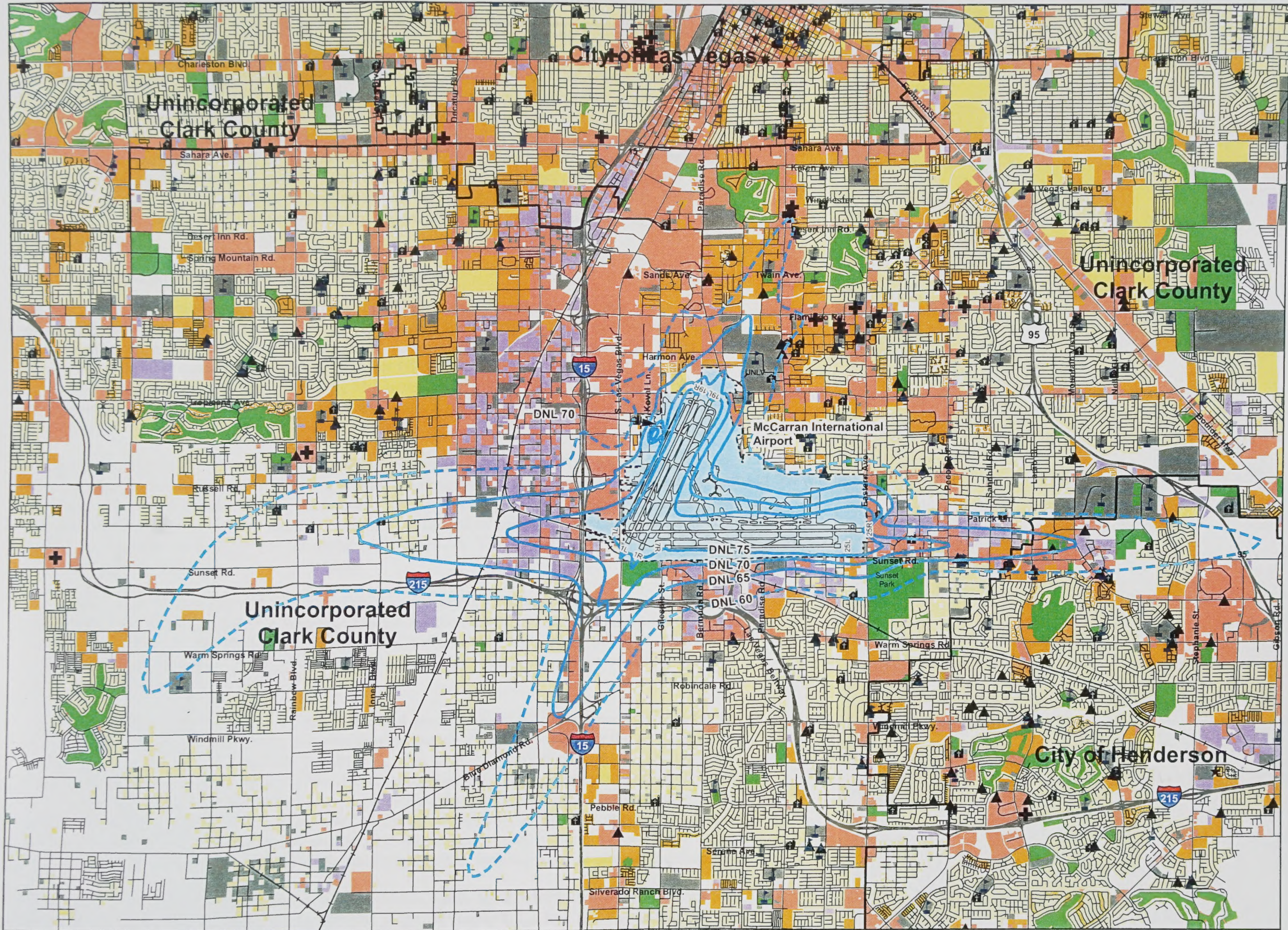
Two specific ranges of noise exposure were estimated in the helicopter noise analysis: (1) DNL 65 and higher and (2) DNL 60 to 65. Clark County agencies use information regarding noise exposure between DNL 60 and DNL 65 for local planning purposes; therefore DNL 60 noise contours are depicted on exhibits in this EA.

3.5.1 McCarran International Airport

Noise exposure contours representing total aircraft operations, including helicopter operations, at McCarran in 2004 are presented on **Exhibit III-3** and are reproduced from the *Noise Exposure Map Report, FAR Part 150 Noise Compatibility Study Update*. As shown on Exhibit III-3, although noise-sensitive land uses throughout the vicinity of McCarran are exposed to aircraft noise of DNL 65 and higher, the highest levels of aircraft noise exposure occur in areas west/southwest of McCarran. The primary contributors to aircraft noise in these areas are overflights by aircraft departing McCarran on Runways 25L and 25R. In 2004, about 54 percent of daytime air carrier aircraft departures and 82 percent of nighttime air carrier aircraft departures from McCarran occurred on Runways 25L and 25R. Departures on Runways 19L and 19R (accounting for about 25 percent of daytime departures and 9 percent of nighttime departures from McCarran in 2004) also contribute to aircraft noise in areas south/southwest of McCarran.

⁶ A-weighted sound pressure level is a frequency-weighted sound level that correlates with the way sound is perceived by the human ear.

⁷ The total aircraft noise exposure contours were derived from the *Noise Exposure Map Report, FAR Part 150 Noise Compatibility Study Update*, which was completed in November 2006. The FAA accepted the 2004 and 2011 noise exposure maps for McCarran International Airport in July 2007.



Legend

- 2004 noise exposure contours (expressed in DNL)
- 2004 DNL 60 noise exposure contour (shown for informational purposes only)

DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.

Generalized existing land uses

- | | |
|---|--|
| Residential single-family | Park / recreation* |
| Residential multi-family | Public |
| Mobile home | Vacant / open land |
| Commercial | Airport property |
| Industrial | |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Sources: Brown-Buntin Associates, Inc., October 2005 (noise exposure contours); Ricondo & Associates, Inc., August 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

0 7,000 feet
↑
north

Existing (2004) Aircraft Noise Exposure Contours and Generalized Existing Land Uses McCarran International Airport

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Exhibit III-4 depicts 2004 noise exposure contours associated solely with helicopter operations at McCarran International Airport superimposed on a map of generalized existing land uses. The 2004 helicopter noise exposure contours were developed by Brown-Buntin Associates, Inc. (BBA), using INM Version 7.0. As shown on Exhibit III-4, noise exposure levels of DNL 65 generated by helicopter tour operations in 2004 did not extend beyond McCarran's property boundary. As can be seen by comparing Exhibits III-3 and III-4, the relative contribution of helicopter operations to the 2004 DNL 65 noise exposure contour at McCarran was very minimal. Noise generated by helicopter operations at McCarran in 2004 was, relatively, overwhelmed by noise generated by fixed-wing aircraft operations.

3.5.2 2004 Ambient Noise Monitoring Program

As part of the preparation for this EA, the existing (2004) ambient noise environment in the vicinity of the Heliport site, and at other locations near and beneath the Overflight Area, was evaluated using a noise-monitoring program. Continuous noise monitoring for a minimum of 24 hours was conducted at the 10 locations depicted on **Exhibit III-5**. Two of the noise-monitoring locations represent alternative heliport sites, noted as McCarran International Airport and South of Sloan (Proposed Action) and eight of the locations are beneath the Overflight Area, noted as sites R1 through R8.

Noise monitoring locations were selected by BBA with input from the CCDOA and the BLM. The noise monitoring locations were selected to provide reference locations for assessing project-related noise impacts, which are discussed in Section 4.1. Noise level measurements were recorded during July and October 2004. Noise monitoring equipment consisted of Larson-Davis Laboratories (LDL) Model 820 sound level analyzers equipped with Bruel & Kjaer (B&K) Type 4176 0.5-inch microphones (see Appendix D for more details).

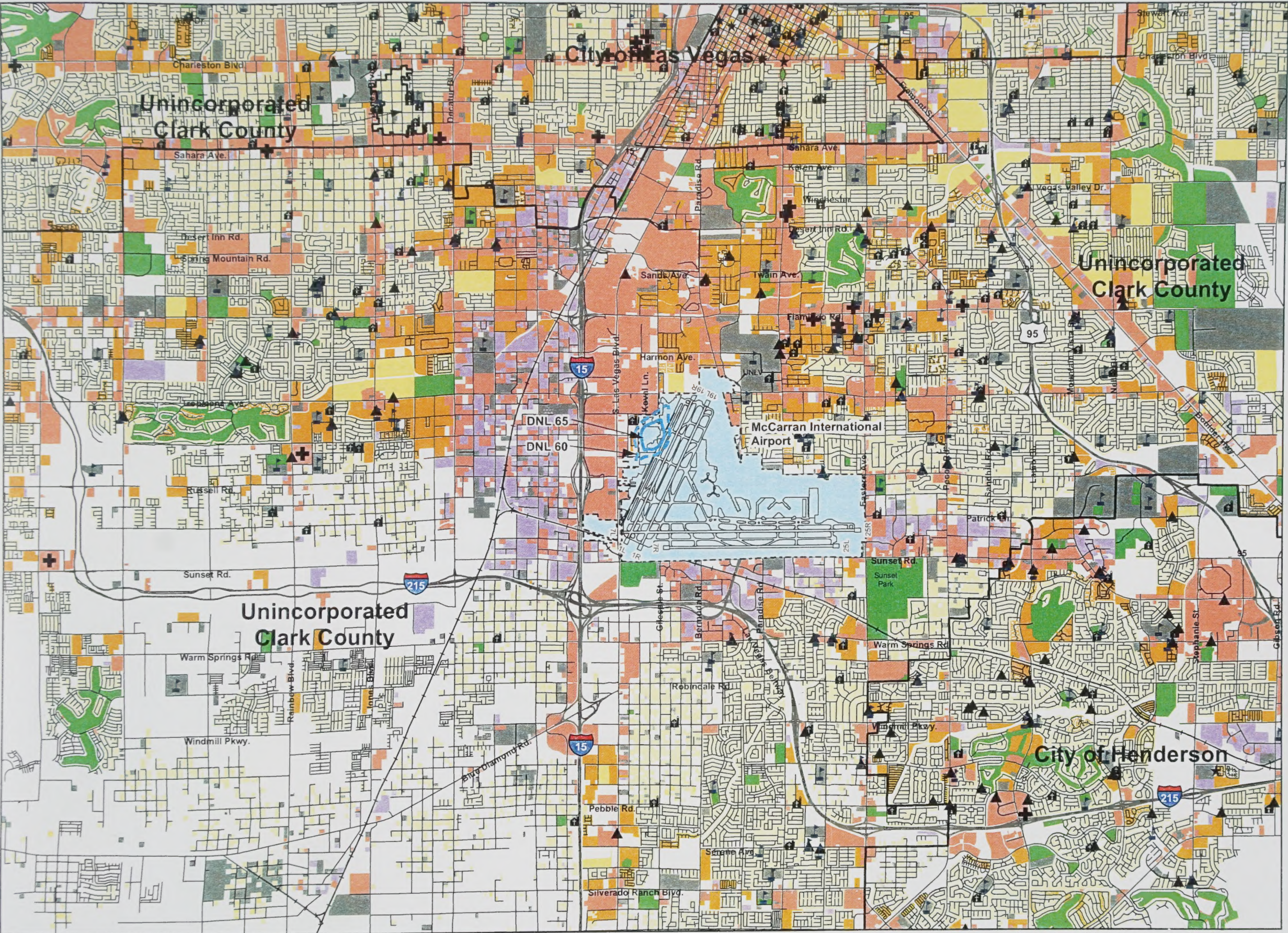
In addition to the 10 sites noted above, ambient noise monitoring data from two locations beneath the Overflight Area, from an unrelated project conducted by the Federal Aviation Administration⁸, was also evaluated and incorporated into this EA for informational purposes. Ambient noise monitoring was conducted by the FAA for 16-17 days at those locations. The FAA noise monitoring sites are depicted as L05 and L07 on Exhibit III-5.

As previously mentioned, DNL is the average sound pressure level in A-weighted decibels for an average day of the year. Other statistical descriptors that are useful in describing the ambient noise characteristics of a specific location include L_{max} , L_{eq} , and L_{90} . Such descriptors are typically calculated for each one-hour interval of the overall sample period. L_{max} represents the highest noise level measured during a sample period and L_{eq} represents the energy average noise level during the sample period. L_{90} describes the noise level exceeded 90 percent of the time during the sample period. L_{90} is useful for describing the background (or residual) noise in the absence of any easily defined noise events, such as those caused by occasional traffic, barking dogs, or aircraft overflights.

The ambient noise monitoring results are summarized in **Table III-2**, which shows the locations and dates of the noise measurements, along with the range of hourly L_{max} , L_{eq} , and L_{90} values for the sampling periods. The FAA did not report L_{max} values for Sites L05 and L07. Table III-2 also shows

⁸ Federal Aviation Administration, *Baseline Ambient Sound Levels in Lake Mead National Recreation Area* (DOT-VNTSC-FAA-06-13), April 2006

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Legend

- 2004 DNL 65 helicopter noise exposure contour
- - - 2004 DNL 60 helicopter noise exposure contour (shown for informational purposes only)

DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.

Generalized existing land uses

- | | |
|---------------------------|---------------------|
| Residential single-family | Park / recreation* |
| Residential multi-family | Public |
| Mobile home | Vacant / open space |
| Commercial | Airport property |
| Industrial | |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

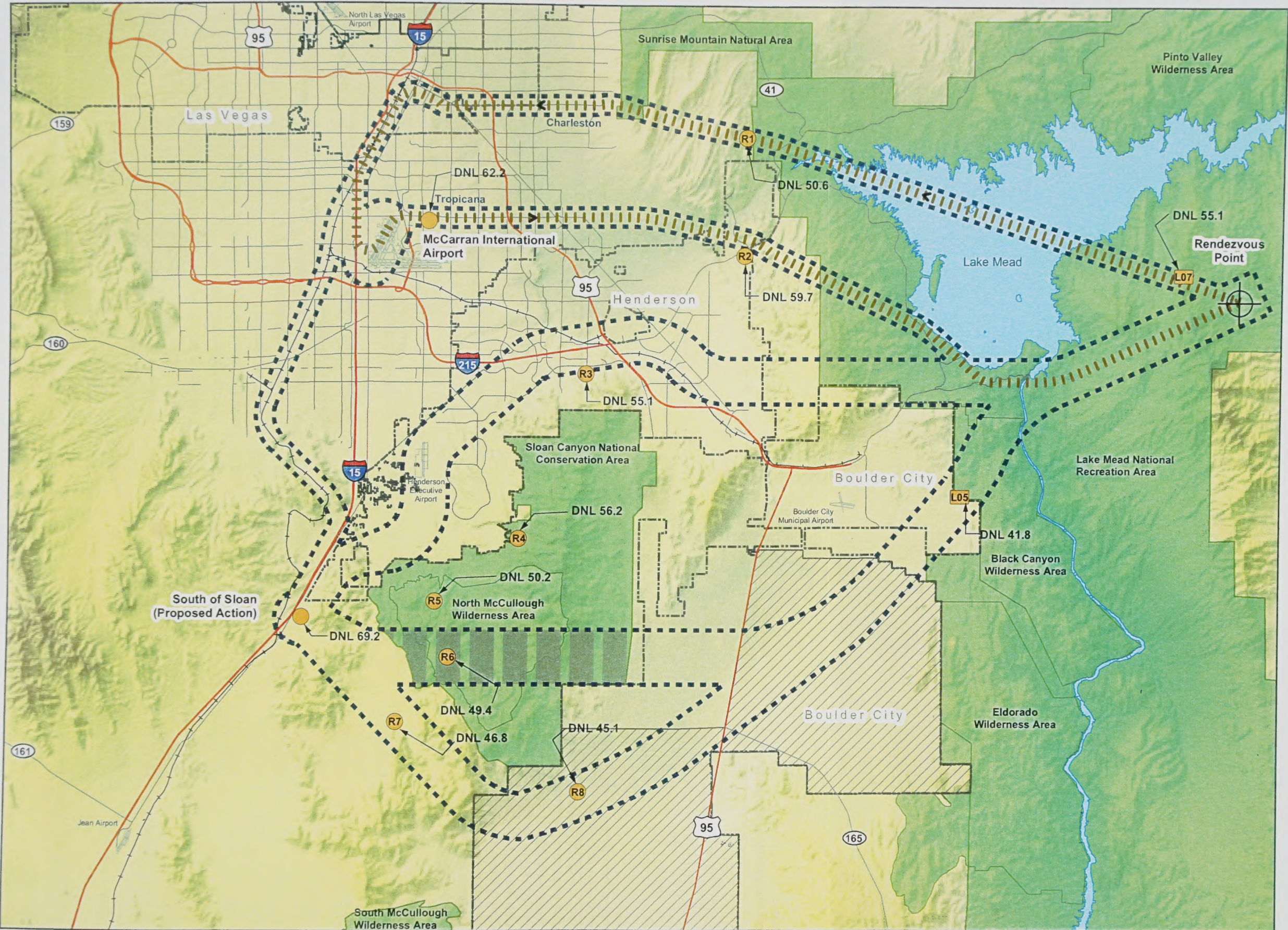
- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Sources: Brown-Buntin Associates, Inc., September 2007 (noise exposure contours); Ricondo & Associates, Inc., September 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.



Existing (2004) Helicopter Noise Exposure Contours and Generalized Existing Land Uses
McCarran International Airport

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Legend

Ambient noise monitors

- At alternative heliport site
- Underneath or near potential and existing flight corridors
- FAA noise monitoring site

DNL 60.0 Measured ambient DNL (see Table III-2)

Other features

- Primary road
- Secondary/State road
- Railroad
- Jurisdictional boundary

Overflight area

National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area

Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area

Boulder City conservation easement

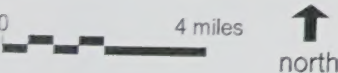
Helicopter flight corridors

- McCarran International Airport existing flight corridor to or from the Grand Canyon
- Direction of traffic

Flight Corridor Identification

- Charleston Existing arrival flight corridor along Charleston Boulevard
- Tropicana Existing departure flight corridor along Tropicana Avenue

Sources: Ricondo & Associates, Inc., August 2007; Clark County Department of Aviation; Brown-Buntin Associates, Inc. (sites R1 through R8); Federal Aviation Administration, "Baseline Ambient Sound Levels in Lake Mead National Recreation Area," April 2006 (sites L05 and L07).
Prepared by: Ricondo & Associates, Inc., August 2008.



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Table III-2

Summary of Noise Level Measurements – All Ambient Sources

Location Name	Date	Hourly Noise Levels (dBA) ^{1/}			DNL	Source of Noise
		L _{max}	L _{eq}	L ₉₀		
South of Sloan	07/01/04	61-79	51-65	46-57	69.2	Roadway traffic, railroad, and wind
McCarran International Airport	08/03/04	63-83	50-62	48-55	62.2	Fixed-wing aircraft, helicopters, and roadway traffic
R1	10/13/04	40-73	23-59	18-45	50.6	Fixed-wing aircraft and helicopters
R2	10/13/04	52-83	35-67	28-52	59.7	Fixed-wing aircraft, helicopters, and roadway traffic
R3	10/13/04	49-75	38-56	34-49	55.1	Fixed-wing aircraft and wind
R4	10/28/04	58-75	43-54	31-45	56.2	Construction activities and wind ^{2/}
R5	10/28/04	29-77	19-55	18-30	50.2	Fixed-wing aircraft and wind
R6	10/28/04	41-75	26-54	19-34	49.4	Fixed-wing aircraft and wind
R7	10/28/04	38-72	23-52	19-39	46.8	Fixed-wing aircraft and wind
R8	10/28/04	42-77	31-53	22-37	45.1	Commercial activities and wind ^{3/}
L05 ^{4/}	05/06/04 – 05/22/04	— ^{6/}	25-42	17-28	41.8 ^{5/}	Aircraft, vehicles, visitors, gunfire, and wind
L07 ^{4/}	05/05/04 – 05/21/04	— ^{6/}	30-61	21-31	55.1 ^{5/}	Aircraft, vehicles, watercraft, water, and wind

Notes:

dBA = A-weighted decibel

DNL = Day-night average sound level

^{1/} The range of hourly noise levels measured over a 24-hour period. Noise levels were measured over a 16-17-day period at L05 and L07.^{2/} Construction-related noise is expected to be temporary.^{3/} Commercial activities include the Jean Sport Aviation Center and casino hotel.^{4/} FAA ambient noise monitoring site and data as described in *Baseline Ambient Sound Levels in Lake Mead National Recreation Area* (DOT-VNTSC-FAA-06-13), April 2006.^{5/} DNL values estimated based upon hourly L_{eq} data measured by the FAA, as referenced in Note 4 above.^{6/} FAA did not report L_{max} values for Sites L05 and L07.

Source: Brown-Buntin Associates, Inc., January 2005

Prepared by: Ricondo & Associates, Inc., December 2008

the measured DNL for the sample period at Sites R1-R8 and at the two alternative heliport sites and the sources of ambient noise that were noted while an observer was present. The DNL values reported in Table III-2 for FAA Sites L05 and L07 were estimated from average hourly L_{eq} data since the FAA did not report measured DNL values for those sites. The measured or estimated DNLs for the sample periods at each location are also presented on Exhibit III-5.

The ambient acoustical environment at each of the noise monitoring locations is described below. Appendix D provides exhibits summarizing the hourly noise levels measured at each location, along with the measured or estimated DNL for the noise-monitoring periods. A photograph of each noise monitoring location and the noise monitoring equipment setup is included with each exhibit. The exhibits demonstrate that ambient noise levels vary during the day and night, with the lowest noise levels generally occurring during the late night and early morning hours.

3.5.2.1 Proposed Heliport Site

The Heliport site is located in an undeveloped area on the east side of I-15 and the Union Pacific Railroad corridor. Primary noise sources affecting the environs around the Heliport site are freeway traffic and railroad operations, although small fixed-wing aircraft and helicopters occasionally fly along the interstate corridor. Noise measurements were recorded on July 1, 2004. Measured hourly background noise levels, as defined by the L_{90} , ranged from 46 to 57 dBA and the measured DNL for the 24-hour sample period was 69.2. This measurement primarily reflected roadway traffic and wind. Appendix D presents a summary of hourly noise levels at the Heliport site for the noise-monitoring period.

3.5.2.2 McCarran International Airport

The primary noise sources at McCarran International Airport are fixed-wing jet aircraft. As the site is located close to existing major roadways, roadway traffic is also a primary noise source affecting the area. Noise measurements were recorded on August 3, 2004, at a location near the University of Nevada, Las Vegas, just north of McCarran. This location is affected by noise from fixed-wing aircraft, roadway traffic, and existing helicopter air tour operations along the Tropicana flight corridor. Measured hourly background noise levels, as defined by the L_{90} , ranged from 48 to 55 dBA and the measured DNL for the 24-hour sample period was 62.2. Maximum noise levels from individual aircraft operations ranged from 75 to 85 dBA. Appendix D provides an exhibit that summarizes hourly noise levels for the noise-monitoring period at McCarran.

According to the *LAS FAR Part 150 Noise Compatibility Study Update*, the number of households and people estimated to have been exposed to all sources of aircraft noise of DNL 65 and higher in 2004 were 2,189 and 4,286, respectively.

3.5.2.3 Ambient Noise Levels at Other Locations in the Overflight Area

Noise monitoring locations R1 through R8 and FAA locations L05 and L07 as shown on Exhibit III-5, represent areas that currently experience helicopter overflights or that could experience helicopter overflights if a heliport were constructed at the Heliport site. Locations R1, R2, and L07 are in areas that currently experience helicopter air tour flights originating at McCarran. Locations R3 through R8, and L05 are in areas not currently affected by such flights. Locations L05 and L07 are located within the Lake Mead National Recreation Area (LMNRA). Location R1 is just outside the western boundary of the LMNRA and locations R4 through R6 are within the Sloan Canyon National Conservation Area (NCA) and/or North McCullough Wilderness Area. Noise sources

affecting the noise monitoring locations included wind over the ground and in the sparse vegetation of the area and, in most cases, aircraft overflights. Most of the locations were affected by overflights of air carrier jet aircraft associated with operations at McCarran. Smaller fixed-wing aircraft operating at McCarran, the Henderson Executive Airport, and the Boulder City Municipal Airport were also observed to overfly locations R5, R6, and R7. Measured hourly background noise levels, as defined by the L_{90} , ranged from a low of 17-18 dBA at locations R1, R5, and L05, to a high of 52 dBA at location R2. The measured or estimated DNLs for the 24-hour sample periods ranged from 41.8 at location L05 to 59.7 at location R2. Exhibits in Appendix D summarize hourly noise levels during the noise monitoring periods for the representative noise monitoring locations.

3.6 Compatible Land Use

Federal agencies have adopted guidelines for compatible land uses and environmental noise levels. On the basis of extensive research on the effects of noise on people, it has been determined that noise levels that are incompatible with residential land uses may be compatible with commercial and industrial land uses, including stores and factories [III-3]. The FAA has developed land use compatibility guidelines relating types of land uses to aircraft noise levels. 14 CFR Part 150, *Airport Noise Compatibility Planning* [III-4], sets forth compatibility guidelines for residential, public, commercial, manufacturing, and recreational land uses, as presented in **Table III-3**.

3.6.1 Existing Land Uses

Generalized existing land uses on and in the vicinity of the Heliport site and in the vicinity of the west side of McCarran are described below. The exhibits in this section depict existing land uses and not land ownership. The source of the existing land use data is the Clark County Tax Assessor's Office; however the land use classifications have been simplified/generalized to be more consistent with land use classifications in 14 CFR Part 150.

3.6.1.1 Proposed Heliport Site

Exhibit III-6 presents generalized existing land uses on and in the vicinity of the Heliport site. The site is vacant and undeveloped. A vacant 20-acre NDOT materials site is located on the southwestern portion of the site. Vacant and undeveloped BLM-managed land surrounds the Heliport site. The nearest developments are more than one mile from the site and are public land uses. The boundary of the Sloan Canyon NCA is about 2.3 miles east of the Heliport site.

3.6.1.2 McCarran International Airport

Exhibit III-7 depicts the generalized existing land uses in the vicinity of McCarran International Airport. As shown, McCarran is just south of an extensively developed area. The Las Vegas Strip, with a wide array of casinos and hotels, begins northwest of McCarran and extends southward to and along McCarran's west side. Recent trends have included expansion of the Strip further south as the demand for new resorts and hotel facilities has increased. The areas north and east of McCarran are primarily occupied by high-density residential developments and some religious facilities, schools, and neighborhood shopping centers. The University of Nevada, Las Vegas is less than one mile northeast of McCarran. The land south, southeast, and southwest of McCarran are developed with low-density single-family residential, high-density residential, and commercial and industrial developments have been constructed in those areas. Industrial developments are located southwest of McCarran near the interchange of I-15 and Blue Diamond Road. New industrial uses west of I-15 extend almost to Valley View Boulevard.

Table III-3

Suggested Land Use Compatibility Guidelines in Aircraft Noise Exposure Areas

Land Use	DNL 65 to 70	DNL 70 to 75	DNL 75+
Residential			
Residential other than mobile homes and transient lodgings	NLR required ^{1/}	NLR required ^{1/}	Incompatible
Mobile homes	Incompatible	Incompatible	Incompatible
Transient lodgings	NLR required ^{1/}	NLR required ^{1/}	Incompatible
Public Use			
Schools, hospitals, and nursing homes	NLR required ^{1/}	NLR required ^{1/}	Incompatible
Churches, auditoriums, and concert halls	NLR required ^{1/}	NLR required ^{1/}	Incompatible
Governmental services	Compatible	NLR required	NLR required
Transportation	Compatible	Compatible ^{2/}	Compatible ^{2/}
Parking	Compatible	Compatible ^{2/}	Compatible ^{2/}
Commercial Use			
Offices, business, and professional	NLR required	NLR required	NLR required ^{2/}
Wholesale and retail—building materials, hardware, and farm equipment	Compatible	Compatible ^{2/}	Compatible ^{2/}
Retail trade—general	NLR required	NLR required	NLR required
Utilities	Compatible	Compatible ^{2/}	Compatible ^{2/}
Communication	NLR required	NLR required	NLR required
Manufacturing and Production			
Manufacturing—general	Compatible	Compatible ^{2/}	Compatible ^{2/}
Photographic and optical	Compatible	NLR required	NLR required
Agriculture (except livestock) and forestry	Compatible	Compatible	Compatible
Livestock farming and breeding	Compatible	Compatible	Incompatible
Mining and fishing resources production and extraction	Compatible	Compatible	Compatible
Recreational			
Outdoor sports arenas and spectator sports	Compatible ^{3/}	Compatible ^{3/}	Incompatible
Outdoor music shells, amphitheaters	Incompatible	Incompatible	Incompatible
Nature exhibits and zoos	Compatible	Incompatible	Incompatible
Amusements, parks, resorts, and camps	Compatible	Compatible	Incompatible
Golf courses, riding stables, and water recreation	Compatible	Compatible	Incompatible

DNL = Day-night average sound level, in A-weighted decibels.

Compatible = Generally, no special noise attenuating materials are required to achieve an interior noise level of DNL 45 in habitable spaces, or the activity (whether indoors or outdoors) would not be subject to a significant adverse effect by the outdoor noise level.

Incompatible = Generally, the land use, whether in a structure or an outdoor activity, is considered to be incompatible with the outdoor noise level even if special attenuating materials were to be used in the construction of the building.

NLR = Noise Level Reduction. NLR is used to denote the total amount of noise transmission loss in decibels required to reduce an exterior noise level in habitable interior spaces to DNL 45. In most places, typical building construction automatically provides an NLR of 20 decibels. Therefore, if a structure is located in an area exposed to aircraft noise of DNL 65, the interior noise level would be about DNL 45. If the structure is located in an area exposed to aircraft noise of DNL 70, the interior noise level would be about DNL 50, so an additional NLR of 5 decibels would be required if not afforded by the normal construction. This NLR can be achieved through the use of noise attenuating materials in the construction of the structure.

Notes:

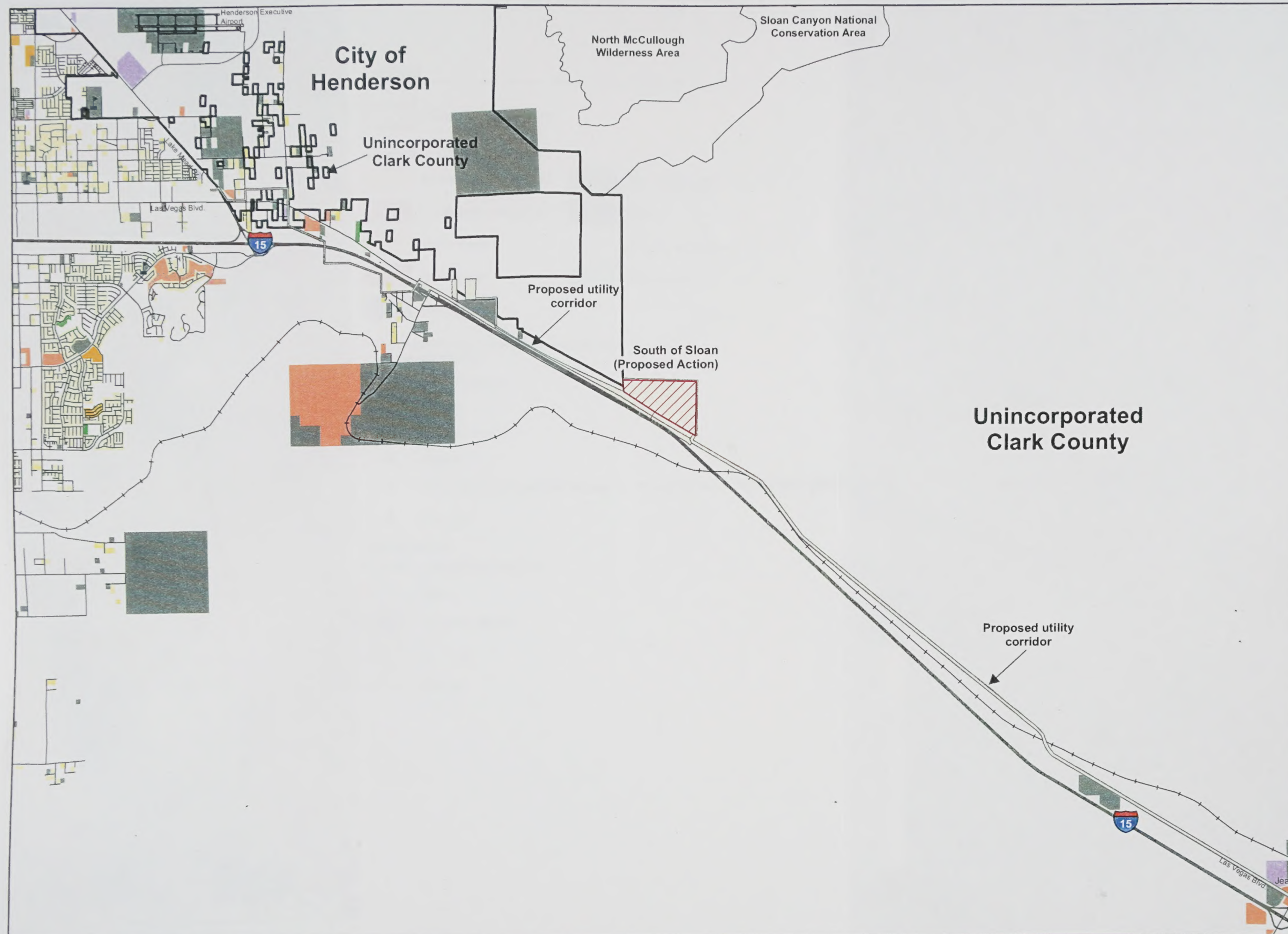
1/ The land use is generally incompatible with aircraft noise and should only be permitted in areas of infill in existing neighborhoods or where the community determines that the use must be allowed.

2/ NLR required in offices or other areas with noise-sensitive activities.

3/ Provided that special sound reinforcement systems are installed.

Source: U.S. Department of Transportation, Federal Aviation Administration, Federal Aviation Regulations Part 150, *Airport Noise Compatibility Planning*, Code of Federal Regulations, Title 14, Chapter I, Subchapter I, Part 150, Table 1, January 18, 1985, as amended.

Prepared by: Ricondo & Associates, Inc., April 2008



Legend

Proposed heliport site area

Area of disturbance

Note: The area of disturbance includes areas that could be affected by construction or the extension of utilities to the site.

Generalized existing land uses

Residential single-family	Industrial
Residential multi-family	Park / recreation*
Mobile home	Public
Commercial	Vacant / open space

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

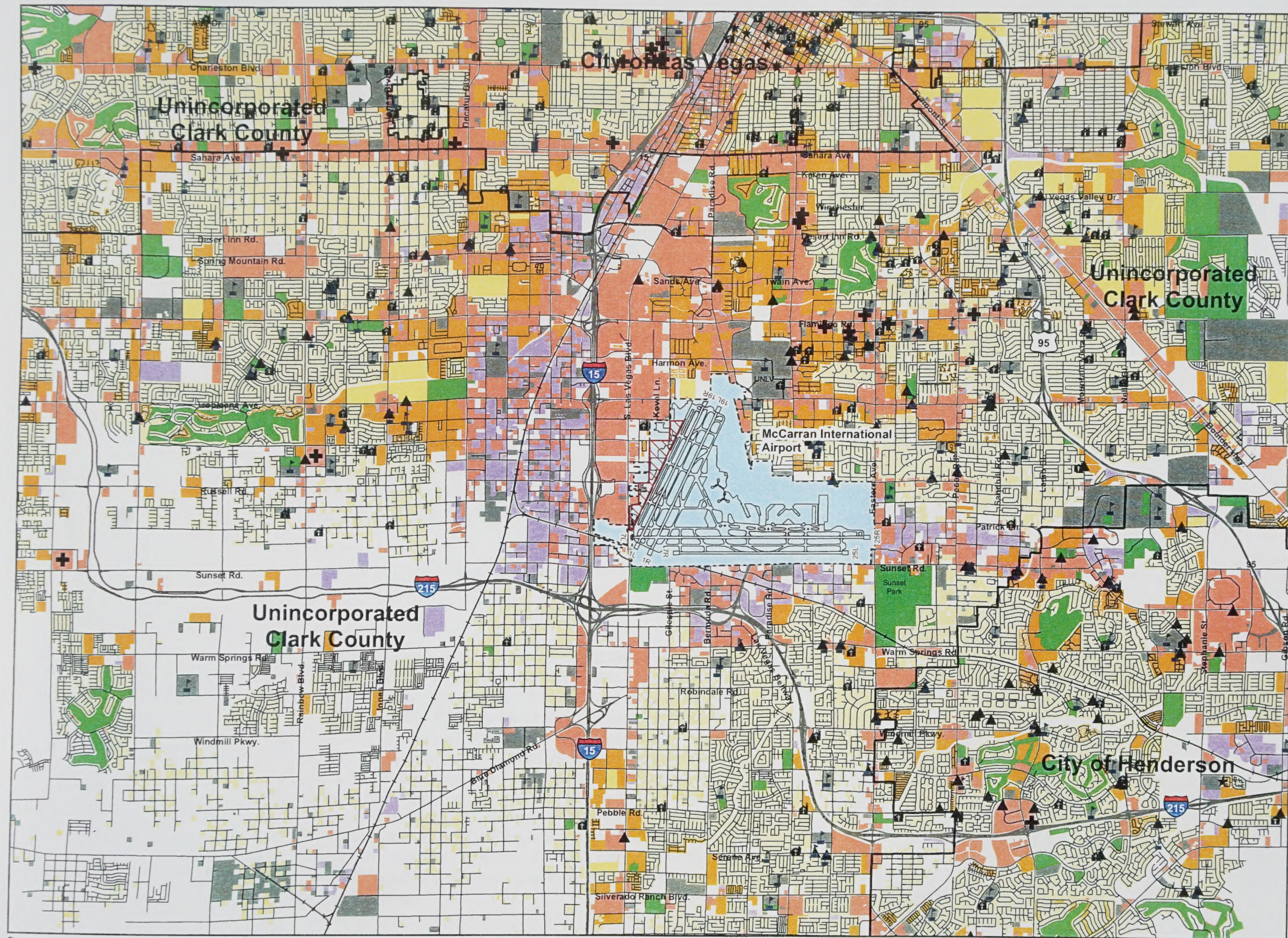
Sources: SWCA Environmental Consultants (area of disturbance); Ricondo & Associates, Inc., August 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit III-6

Generalized Existing Land Uses in the Vicinity of the Area of Disturbance

December 2008

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Sources: Ricondo & Associates, Inc., August 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
 Prepared by: Ricondo & Associates, Inc., April 2008.

Legend

- Existing heliport site area
- Generalized existing land uses**
- | | |
|---------------------------|---------------------|
| Residential single-family | Park / recreation* |
| Residential multi-family | Public |
| Mobile home | Vacant / open space |
| Commercial | Airport property |
| Industrial | |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Exhibit III-7

Generalized Existing Land Uses in the Vicinity of McCarran International Airport

December 2008

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3.6.1.3 Existing Land uses beneath Overflight Area

Generalized existing land uses beneath the Overflight Area are shown on **Exhibit III-8**. Much of the Overflight Area is undeveloped open space administered by the BLM. The Lake Mead National Recreation Area is administered by the National Park Service and is classified as park/recreation on Exhibit III-8.

3.6.2 Planned Land Uses

Clark County is divided into numerous planning areas covering incorporated jurisdictions and unincorporated areas. **Exhibit III-9** depicts planning areas in the Las Vegas region, including Clark County and incorporated cities. Planned land use recommendations for incorporated cities (Henderson, Boulder City, and Las Vegas) are addressed in comprehensive plans/land use plans developed by various city departments. Planned land use recommendations for unincorporated portions of Clark County are addressed in land use plans developed by the Clark County Department of Comprehensive Planning and adopted by the Clark County Board of County Commissioners. The Clark County Board of County Commissioners has adopted development plans and guides for the unincorporated towns of Enterprise, Goodsprings (the South County Planning Area), Whitney, and Winchester and Paradise and for unincorporated areas south of the Las Vegas Valley (the South County Planning Area).

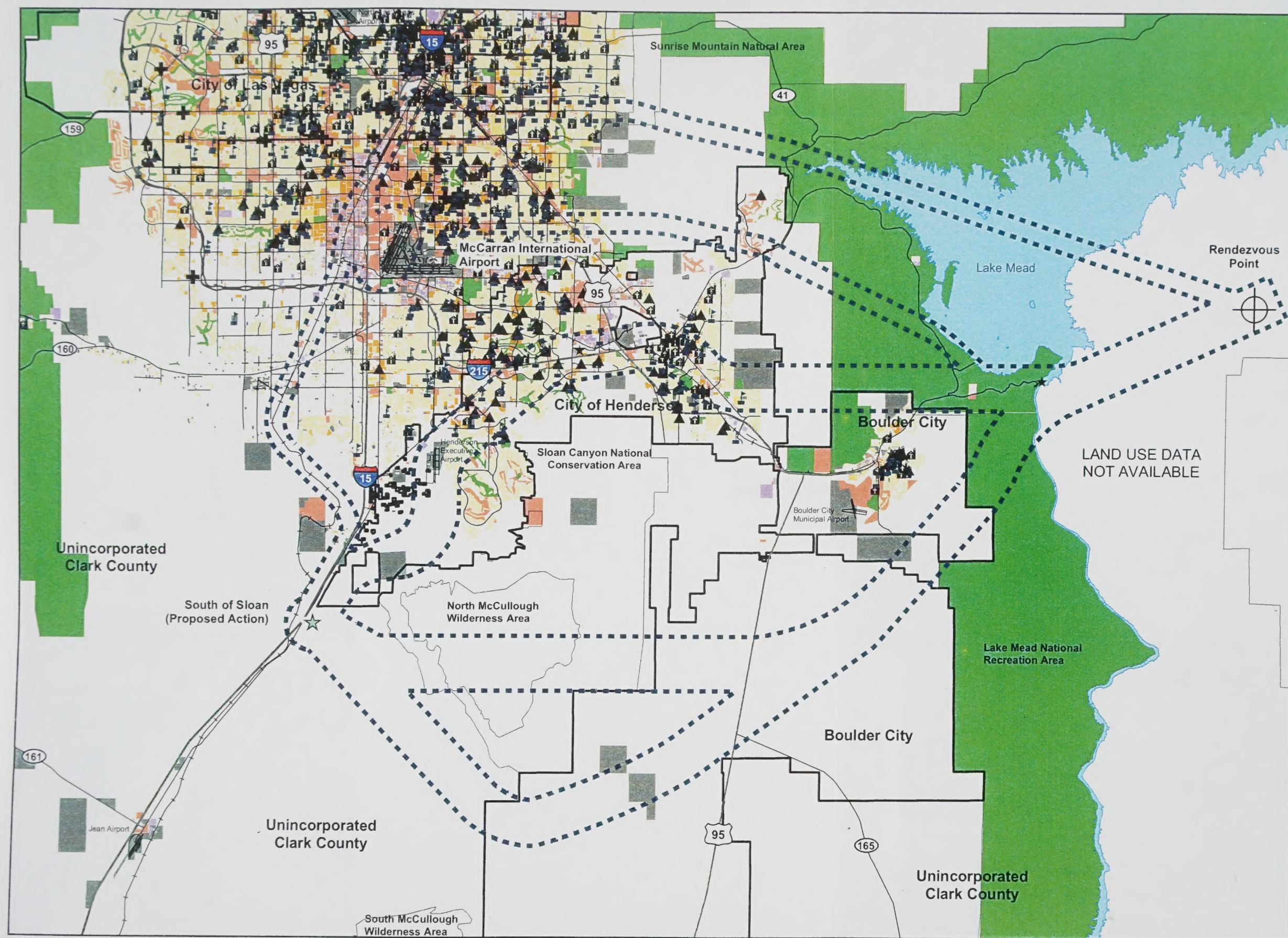
The exhibits in this section depict planned land uses and not land ownership. The sources of the planned land use data are listed above; however the land use classifications used by Clark County and the incorporated cities have been simplified/generalized to be more consistent with land use classifications in 14 CFR Part 150.

The following sections describe generalized existing land uses in the vicinity of the Heliport site and in the vicinity of the west side of McCarran.

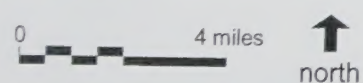
3.6.2.1 Proposed Heliport Site

Generalized planned land uses in the vicinity of the Heliport site are depicted on **Exhibit III-10**. The site is located in unincorporated Clark County within the area covered by the *South County Land Use and Development Guide* [III-5]. Clark County is currently updating portions of this plan, which was adopted in 1994 and amended in 2005. In 2007, the City of Henderson annexed about 3,455 acres of land, which expanded the city boundary southwestward and created the West Henderson Planning Area. The southern boundary of the West Henderson Planning Area is located adjacent to the northern boundary of the Heliport site. Planned land use designations contained in Clark County's *South County Land Use and Development Guide* apply to the portion of the West Henderson Planning Area south of Sloan Road. Land parcels in the immediate surroundings of the Heliport site are anticipated to remain vacant in the future based on adopted land use plans and current land ownership status. About one mile northeast of the Heliport site within the West Henderson Planning Area, there is a parcel that is planned for single-family residential land uses; however, no specific development projects have been proposed for the parcel.

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Source: Ricondo & Associates, Inc., August 2007 based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

Final EA for a Southern Nevada Regional Heliport
Affected Environment

Legend

- Proposed heliport site**

Overflight area

Generalized existing land uses

	Residential single-family		Industrial
	Residential multi-family		Park / recreation*
	Mobile home		Public
	Commercial		Vacant / open space

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

	School
	Religious facility
	Hospital
	Structure listed in National Register of Historic Places
	Day care

Other features

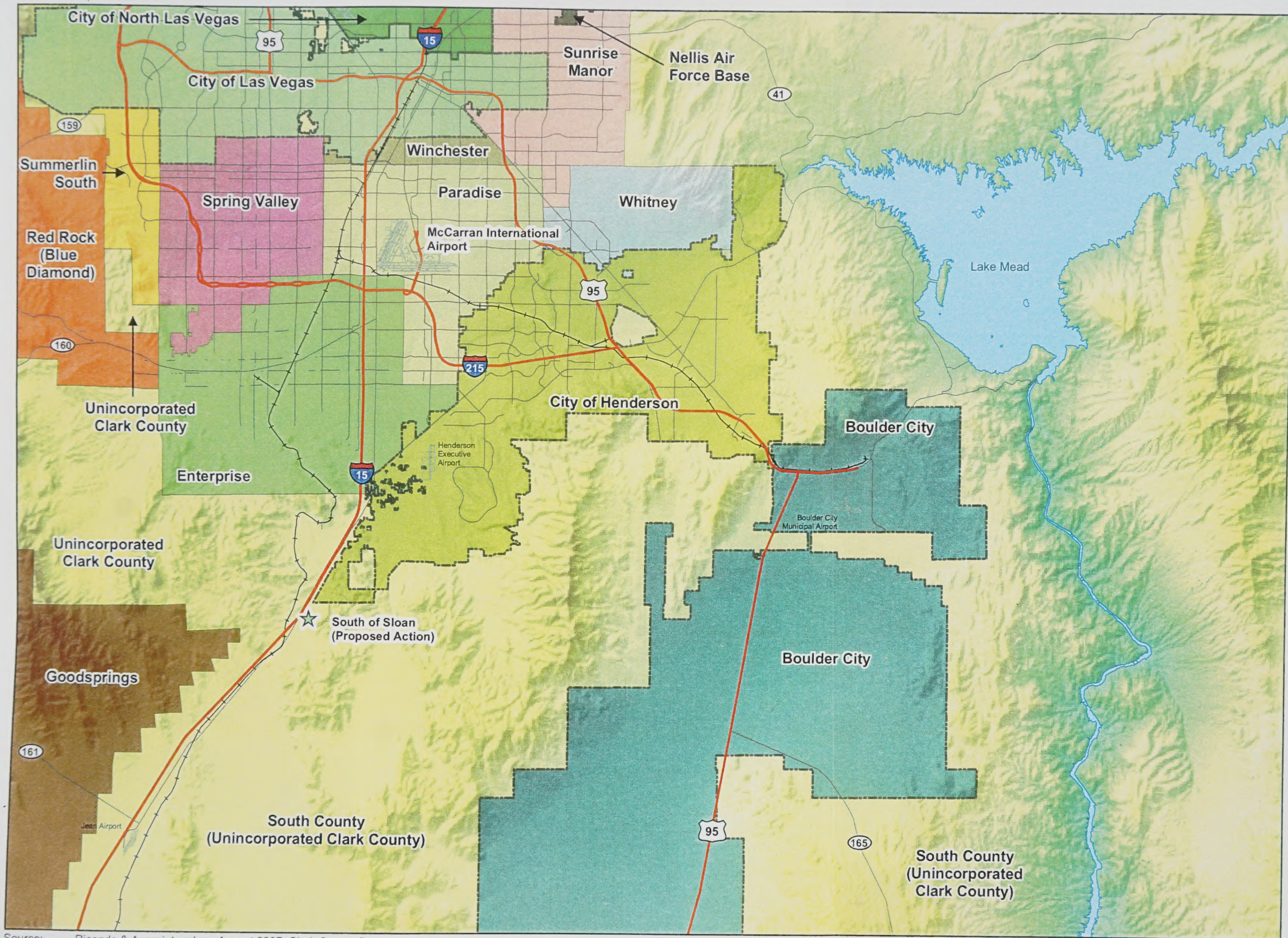
	Jurisdictional boundary
	Street
	Interstate highway
	U.S. route
	Railroad

Exhibit III-8

Generalized Existing Land Uses in the Overflight Area

December 2008

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Legend

- ★ Proposed heliport site
- Primary road
- Secondary/State road
- Railroad
- - - Jurisdictional boundary

Source: Ricondo & Associates, Inc., August 2007; Clark County Department of Aviation.
 Prepared by: Ricondo & Associates, Inc., April 2008.

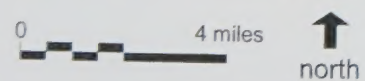
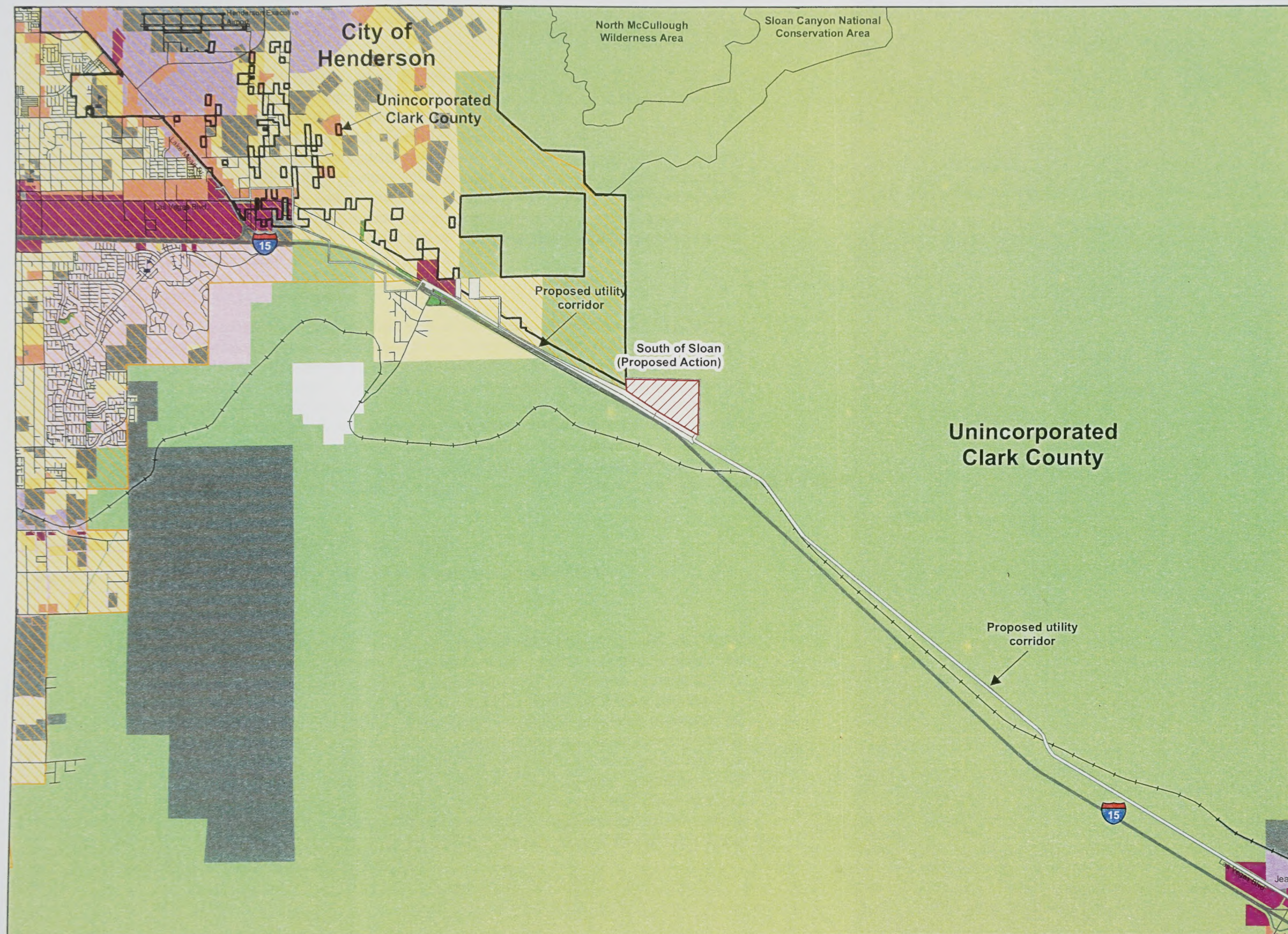


Exhibit III-9

Clark County Planning Areas

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Legend

- Proposed heliport site area
- Bureau of Land Management Disposal Area
- Area of disturbance

Note: The area of disturbance includes areas that could be affected by construction or the extension of utilities to the site.

Generalized planned land uses

- | | |
|---------------------------|---------------------------|
| Residential single-family | Open space |
| Residential multi-family | Park / recreation* |
| Commercial | Public |
| Mixed use | Vacant / tax exempt |
| Industrial | Major development project |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Source: Ricondo & Associates, Inc., August 2007 based on data obtained from the Clark County Department of Comprehensive Planning, February 2005; SWCA Environmental Consultants (area of disturbance).
Prepared by: Ricondo & Associates, Inc., April 2008.

0 7,000 feet
north

Exhibit III-10

Generalized Planned Land Uses in the Vicinity of the Area of Disturbance

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As shown on Exhibit III-10, the Heliport site is located outside the BLM disposal boundary. Development outside the BLM disposal boundary is limited because the land is publicly managed. BLM policies on lands under BLM administration include a variety of public use, conservation, and resource management actions. Certain lands administered by the BLM fall under the classification of general management, while other areas are special designation management areas where specific policies apply. The BLM has developed resource management plans for the special designation management areas in Clark County, including the Sloan Canyon NCA. BLM lands immediately south of the Heliport site fall under the classification of general management. The boundary of the Sloan Canyon NCA is about 2.3 miles east of the site and no change is anticipated to the boundary of the Sloan Canyon NCA in the future.

3.6.2.2 McCarran International Airport

Exhibit III-11 depicts the generalized planned land uses in the vicinity of McCarran. McCarran is located in the Paradise Planning Area and is adjacent to the Enterprise (to the south and southwest), Spring Valley (to the west), and Winchester (to the north) planning areas. Planned land uses in the vicinity of McCarran generally represent a continuation of existing land use patterns with infill of mixed-use, commercial, industrial, and single- and multi-family residential uses in vacant areas to the west and southwest, with a shift in use from industrial to commercial adjacent to the airport to the south and east, and a focus on mixed use along the I-15 corridor. The University of Nevada, Las Vegas is located northeast of McCarran. On the west side of McCarran, land uses are planned to be predominantly mixed use, public, and industrial, with small pockets of recreational uses and residential uses.

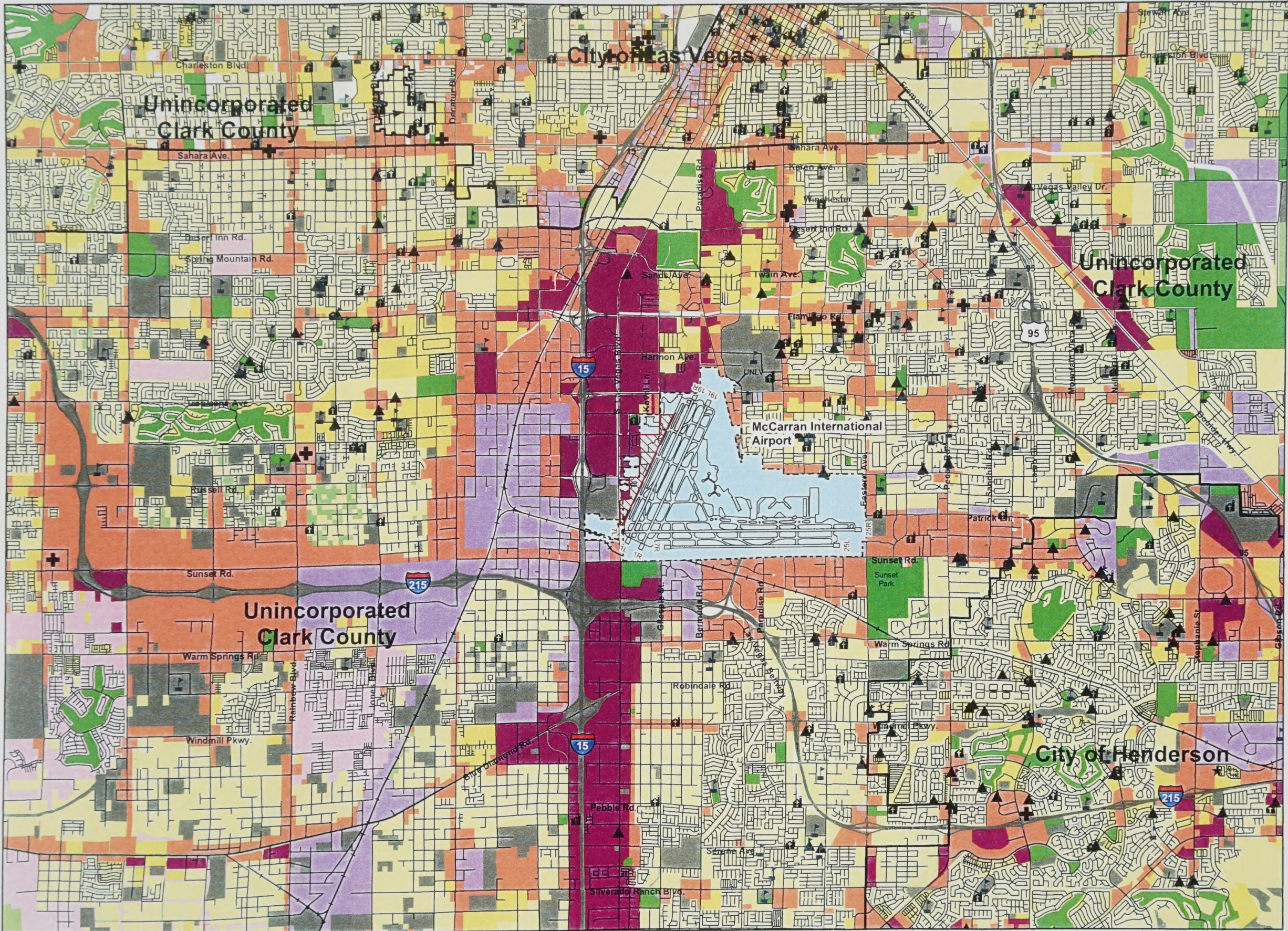
3.6.2.3 Planned Land Uses beneath Overflight Area

Generalized planned land uses in the Overflight Area are shown on **Exhibit III-12**.

3.6.3 Zoning

Zoning is the traditional mechanism used by local governments to control land use and implement the goals and policies of their general plans or community master plans. Zoning controls the location, type, and intensity of new land uses, and is an important tool for preventing incompatible land uses from being developed in the vicinity of airports. The legal basis for zoning powers is to protect the health, safety, and welfare of the public. Since the establishment of zoning powers in the early 1900s, the courts have been consistent in confirming broad discretion to local governments in carrying out their zoning powers, provided that zoning designations are based on a sound land use policy and plan. Zoning authority for unincorporated portions of Clark County, including public lands, rests with the Clark County Zoning Administrator. Each of the incorporated cities in Clark County has zoning authority within the limits of their jurisdiction. Summaries of the zoning ordinances and zoning designations applicable to the Overflight Area and Area of Disturbance, along with associated exhibits, are provided in **Appendix E**.

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Legend

- Existing heliport site area
- Generalized planned land uses
 - Residential single-family
 - Residential multi-family
 - Commercial
 - Mixed use
 - Industrial
 - Major development project
 - Open space
 - Park / recreation*
 - Public
 - Vacant / tax exempt
 - Airport property

* Recreation includes commercial and non-profit recreational facilities

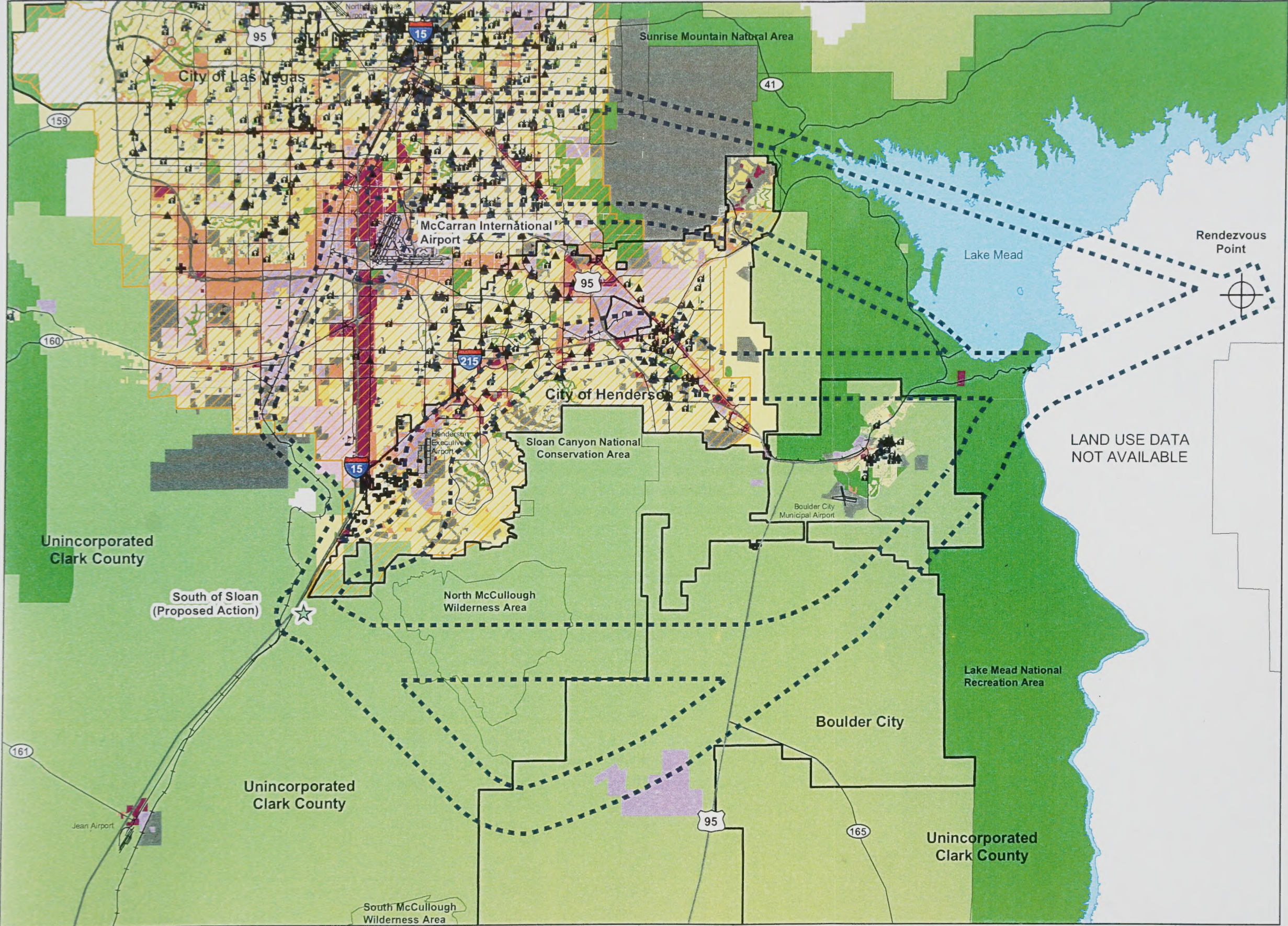
- Noise sensitive facilities
 - School
 - Religious facility
 - Hospital
 - Structure listed in National Register of Historic Places
 - Day care

- Other features
 - Jurisdictional boundary
 - Street
 - Interstate highway
 - U.S. route
 - Railroad

Sources: Ricondo & Associates, Inc., August 2007, based on data obtained from the Clark County Department of Comprehensive Planning, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

0 7,000 feet
north

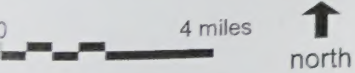
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Legend

- Proposed heliport site
- Overflight area
- Bureau of Land Management Disposal Area
- Generalized planned land uses**
 - Residential single-family
 - Residential multi-family
 - Commercial
 - Mixed use
 - Industrial
 - Open space
 - Park / recreation*
 - Public
 - Vacant / tax exempt
 - Major development project
- * Recreation includes commercial and non-profit recreational facilities
- Noise sensitive facilities**
 - School
 - Religious facility
 - Hospital
 - Structure listed in National Register of Historic Places
 - Day care
- Other features**
 - Jurisdictional boundary
 - Street
 - Interstate highway
 - U.S. route
 - Railroad

Source: Ricondo & Associates, Inc., August 2007 based on data obtained from the Clark County Department of Comprehensive Planning, February 2005, and Boulder City Department of Community Development, March 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.



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3.7 Demographics and Socioeconomic Profile

According to the U.S. Department of Commerce, Bureau of the Census, Clark County was the fourth fastest growing county in the nation between 2000 and 2005, with an addition of over 300,000 new residents [III-6].

Clark County is expected to experience continued economic growth over the next decade. Population and employment in Clark County increased faster than the national averages between 1990 and 2004, and the trend is expected to continue through at least 2020. Key indicators of economic growth in the region include gaming revenues, convention attendance, hotel/motel room demand, and construction activity. Most of the economic growth in recent years has resulted from expansion of the gaming and tourist industries in Las Vegas. In the future, these industries are expected to continue to produce substantial economic growth in the Las Vegas region, although some economic diversification is also expected to occur.

According to the 2000 U.S. Decennial Census, about 1.4 million people live in Clark County [III-6]. By 2006, the number of Clark County residents increased to an estimated 1.9 million residents, according to the Nevada State Demographer's Office [III-7]. The median age of Clark County residents is 34.4 years.

Table III-4 summarizes the household income for Clark County and the United States, as reported in the 2000 U.S. Decennial Census and 2006 Bureau of the Census estimates [III-6, III-8]. The reported median household income for Clark County in 1999 was \$44,616 compared to the national median household income of \$41,994. According to the Las Vegas Valley Chamber of Commerce, the median household income in Clark County was \$47,320 in 2006 [III-9].

Table III-4

Household Income in Clark County and the United States

Household Income	Clark County		United States	
	2000 Census	2006 Census Estimate	2000 Census	2006 Census Estimate
Less than \$10,000	7.1%	5.8%	9.5%	8.0%
\$10,000 to \$14,999	5.1	3.7	6.3	6.0%
\$15,000 to \$24,999	12.4	9.8	12.8	11.4%
\$25,000 to \$34,999	13.1	11.0	12.8	11.2%
\$35,000 to \$49,999	18.1	15.6	16.5	14.8%
\$50,000 to \$74,999	21.5	22.2	19.5	19.0%
\$75,000 to \$99,999	11.1	13.6	10.2	11.8%
\$100,000 to \$149,999	7.5	11.1	7.7	10.9%
\$150,000 to \$199,999	1.9	3.9	2.2	3.7%
\$200,000 or more	2.1	3.2	2.4	3.4%
Total	100.0%	100.0%	100.0%	100.0%

Note: Columns may not add to totals shown because of rounding.

Source: U.S. Department of Commerce, Bureau of the Census, actual data from 2000 Decennial Census, and 2006 estimates from 2006 American Community Survey, 2007

Prepared by: Ricondo & Associates, Inc., April 2008

The ethnicity of Clark County residents and the United States, as reported in the 2000 U.S. Decennial Census and 2006 Bureau of the Census estimates, is presented in **Table III-5** [III-6, III-8]. As shown in Table III-5, about 28.4 percent of people living in the County identified themselves as a minority. The percentage of minorities in Clark County decreased to about 21.5 percent in 2006, based on Bureau of Census estimates.

Table III-5**Ethnicity of Residents in Clark County and the United States**

Race ^{1/}	Clark County		United States	
	2000 Census	2006 Census Estimate	2000 Census	2006 Census Estimate
White	71.6%	78.5%	75.1%	80.1%
Minority ^{2/} :				
Black or African American	9.1%	10.2%	12.3%	12.8%
American Indian and Alaska Native	0.8	0.9	0.9	1.0
Asian	5.3	7.1	3.6	4.4
Native Hawaiian and other Pacific Islander	0.5	0.5	0.1	0.2
Some other race ^{3/}	8.6	n.a.	5.5	n.a.
Two or more races	4.2	2.8	2.4	1.6%
Subtotal: minority	28.4%	21.5%	24.9%	19.9%
Total	100.0%	100.0%	100.0%	100.0%

Notes: Columns may not add to total shown because of rounding.

n.a. = Not available

1/ Race is the subject category for ethnicity, as reported by the U.S. Census Bureau.

2/ The U.S. Census Bureau reports "Hispanic or Latino" population separately because they do not represent "race" categories. The U.S. Census reports for the year 2006, Hispanic or Latino peoples make up about 27% of the total population of Clark County [III-8].

3/ The 2006 Population Estimates dataset does not include data for this category.

Sources: U.S. Department of Commerce, Bureau of the Census, actual data from 2000 Decennial Census, and 2006 estimates from the Population Estimates Program.

Prepared by: Ricondo & Associates, Inc., December 2008

3.8 Air Quality

The federal *Clean Air Act of 1970* (CAA) [III-10], as amended, requires that states identify those areas where the National Ambient Air Quality Standards (NAAQS) are not met for specific air pollutants. The U.S. Environmental Protection Agency (U.S. EPA) has designated such areas as nonattainment areas. A state with a nonattainment area must prepare a State Implementation Plan (SIP) that details the programs and requirements the state will use to meet the NAAQS by the deadlines specified in the *Clean Air Act Amendments of 1990* [III-11].

The U.S. EPA, under mandates of the CAA, as amended, has established primary and secondary NAAQS for seven air contaminants or criteria pollutants [III-12]. These contaminants include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀), lead (Pb), sulfur dioxide (SO₂), and fine particulates (PM_{2.5}). The primary standards were established at levels sufficient to protect public health with a satisfactory margin of safety. The secondary standards were established to protect public welfare from other adverse effects of air pollution.

3.8.1 Air Quality Standards

Federal ambient air quality standards are summarized in **Table III-6**. The federal ambient air quality standards are generally consistent with the ambient air quality standards promulgated by the Nevada Department of Environmental Protection (NDEP) in the Nevada Administrative Code, Section 445B.22097.

Table III-6

Federal Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standard
Ozone (O ₃)	1-hour ^{1/}	0.12 ppm	Same as primary
	8-hour	0.08 ppm	Same as primary
Carbon Monoxide (CO)	8-hour	9.0 ppm	None
	1-hour	35.0 ppm	None
Nitrogen Dioxide (NO ₂)	Annual	0.053 ppm	Same as primary
Sulfur Dioxide (SO ₂)	Annual	0.03 ppm	—
	24-hour	0.14 ppm	—
	3-hour	—	0.50 ppm
Particulate Matter (PM ₁₀)	AAM	Revoked ^{2/}	Revoked ^{2/}
	24-hour	150 µg/m ³	Same as primary
Fine Particulate Matter (PM _{2.5})	AAM	15 µg/m ³	Same as primary
	24-hour	35 µg/m ³	Same as primary
Lead (Pb)	Quarter mean	1.5 µg/m ³	Same as primary

Notes:

AAM = Average annual mean

µg/m³ = Micrograms per cubic meter

ppm = Parts per million

1/ The 1-hour ozone standard was revoked by the U.S. EPA on June 15, 2005, for all areas except 8-hour ozone nonattainment areas where the responsible governmental agency entered into an Early Action Compact (EAC). Clark County is not an EAC area.

2/ Because of the lack of evidence linking health problems to long-term exposure to coarse particulate pollution, the U.S. EPA revoked the annual PM₁₀ standard in 2006 (effective December 17, 2006).

Sources: U.S. Congress, *Clear Air Act of 1970* (Public Law 91-604, Sections 109 and 110).

Prepared by: Ricondo & Associates, Inc., December 2008

3.8.2 Attainment Status

Clark County is divided into 26 hydrographic areas (HAs) determined by the State Engineer's Office. A portion of Clark County is currently designated as a serious nonattainment area for both CO and PM₁₀. The nonattainment areas for CO and PM₁₀ roughly coincide with the boundaries of HA 212, which encompass the Las Vegas Valley and within which the proposed Heliport site is located. HA 212 is also designated as a basic nonattainment area for the 8-hour ozone standard. In addition to HA 212, the 8-hour ozone nonattainment area includes Hydrographi Areas 164A, 164B, 165, 166, 167, 213, 214, 216, 217, and 218, as promulgated by the U.S. EPA in a final rule that became effective September 13, 2004 [III-13].

Exhibit III-13 depicts the locations of the CO and PM₁₀ nonattainment areas in relation to the Heliport site and McCarran. **Exhibit III-14** depicts the location of the 8-hour ozone nonattainment area in relation to the Heliport site and McCarran. As shown, both the Heliport site and McCarran are located within the CO, PM₁₀, and 8-hour ozone nonattainment areas. Clark County has been designated by the U.S. EPA as in attainment for the following pollutants: NO₂, SO₂, Pb, and PM_{2.5}.

3.8.3 State Implementation Plans

In 1990, the portion of the Las Vegas Valley known as hydrographic area (HA) 212 was designated a moderate nonattainment area for CO. In 1992, the Clark County Board of County Commissioners adopted the *Carbon Monoxide State Implementation Plan* (CO SIP) [III-14]. In 1997, HA 212 was redesignated to serious nonattainment for CO. In August 2000, The Clark County Board of County Commissioners adopted a revised CO SIP [III-15]. The U.S. EPA approved the August 2000 CO SIP on September 21, 2004. The CO SIP was revised in 2005 to update the CO emission budget.

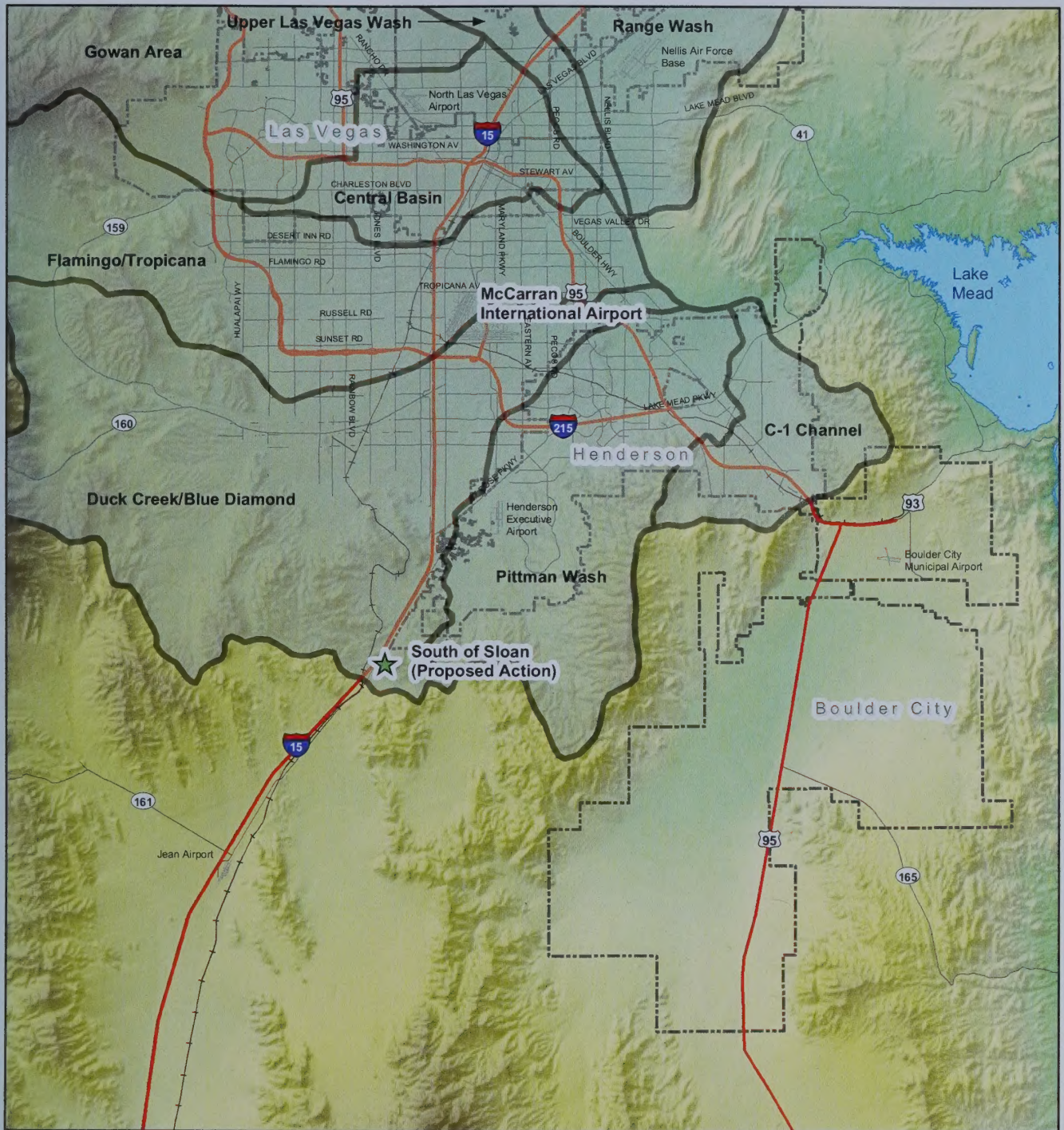
In 1991, the Clark County Department of Comprehensive Planning prepared a *Moderate Area PM₁₀ State Implementation Plan* (PM₁₀ SIP) for HA 212 [III-16]. In 1993, HA 212 was redesignated as a serious nonattainment area for PM₁₀. In 1995, the NDEP submitted a new PM₁₀ SIP to the U.S. EPA. On December 5, 2000, the Clark County Board of County Commissioners requested that the NDEP withdraw all previously submitted SIPs and addendums. A new and completely independent *PM₁₀ State Implementation Plan* (PM₁₀ SIP) [III-17] was submitted to the U.S. EPA in June 2001. The current PM₁₀ SIP, was approved by the U.S. EPA on June 9, 2004 and demonstrates that the County can attain and maintain air quality standards at budgeted emissions levels with the adoption and implementation of control measures.

HA 212, was designated as a nonattainment area for the 8-hour ozone standard on April 15, 2004, but the designation took effect on June 15, 2004. On December 22, 2006, the U.S. Court of Appeals for the District of Columbia Circuit vacated the Ozone Phase I Implementation Rule, which classified portions of Clark County as 'basic'/nonattainment under Subpart I of the Clean Air Act. The court remanded the rule to the U.S. EPA for corrective action. To date, the U.S. EPA has not reissued the rule, leaving Clark County designated nonattainment for ozone but unclassified. The U.S. EPA intends to promulgate a new rule to reclassify the Subpart I areas in the fall of 2008 and finalize the rule in the first half of 2009. In addition, U.S. EPA issued a more stringent ozone standard on March 12, 2008. Clark County exceeds the new standard and anticipates a nonattainment designation in 2010.

3.8.4 Ambient Air Quality Monitoring

The Monitoring Division of the Clark County DAQEM, using monitoring equipment, measures ambient concentrations of pollutants in the County. **Exhibit III-15** depicts the ambient air quality monitoring locations in relation to the Heliport site and McCarran. The monitoring locations are based on such factors as population exposure and highest likely air pollution concentrations. **Table III-7** presents the 2004 (the existing condition year for this EA) ambient air quality conditions reported at each of the monitoring locations shown on Exhibit III-16. The reported averaging periods are consistent with the NAAQS.

The existing ambient air quality conditions at the Heliport site and McCarran, determined by data from the air quality monitoring locations nearest each site for each criteria pollutant, are discussed below. Ambient air quality concentrations of the criteria pollutants reported at these monitoring locations are considered to be background concentrations, representing existing air quality conditions.



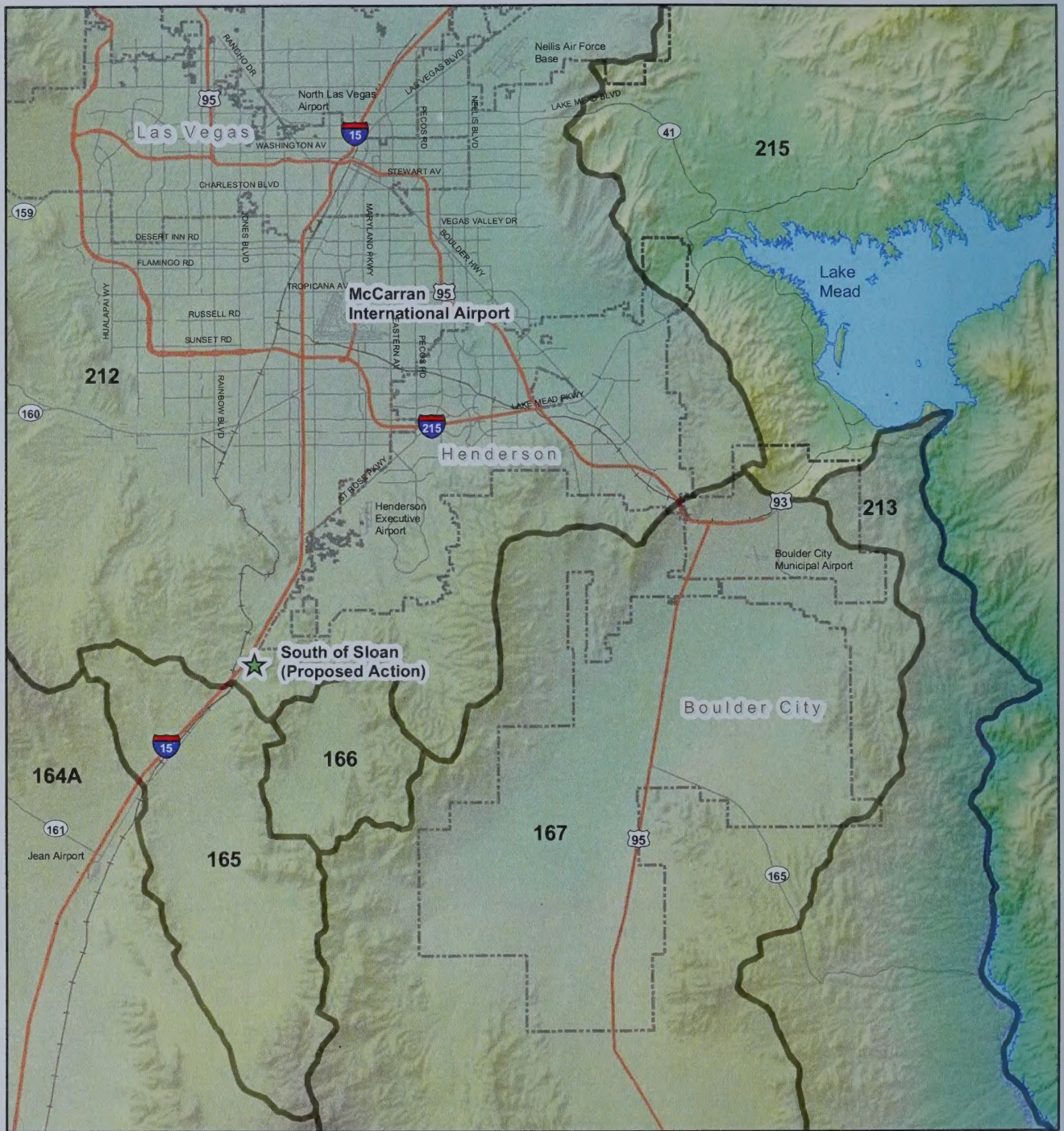
- ★ Proposed heliport site
 — Primary road
 — Secondary road
 — Railroad
 - - - Jurisdictional boundary
 [Shaded Area] Areas designated nonattainment for the carbon monoxide (CO) and particulate matter (PM₁₀) National Ambient Air Quality Standards

Sources: Clark County Department of Aviation; Clark County GIS Management Office.
 Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit III-13

Carbon Monoxide and Particulate Matter Nonattainment Areas

0 6 miles
 north



★ Proposed heliport site

— Primary road

— Railroad

— Secondary road

— Jurisdictional boundary

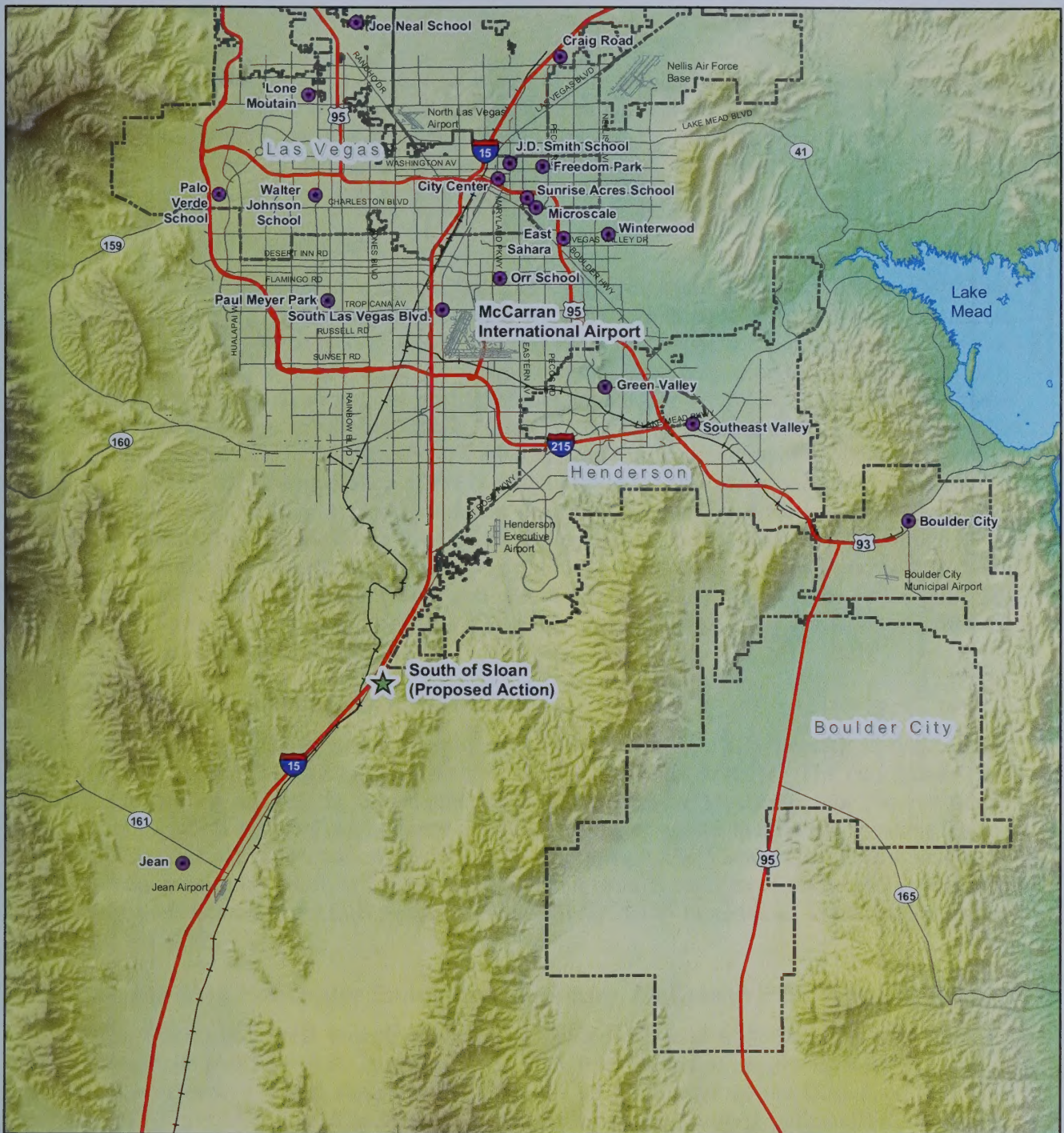
Hydrographic Areas in nonattainment of the 8-hour ozone National Ambient Air Quality Standards. The nonattainment area includes Hydrographic Areas 212, 213, 164A, 165, 166, 167 (depicted) and Hydrographic Areas 164B, 214, 216, 217, and 218 (not depicted).

Sources: Clark County Department of Aviation; Clark County GIS Management Office.
Prepared by: Ricondo & Associates, Inc., September 2008.

Exhibit III-14

0 6 miles
↑
north

8-Hour Ozone Nonattainment Areas



- ★ Proposed heliport site
- Ambient air quality monitor
- Primary road
- Secondary road
- Railroad
- Jurisdictional boundary

Sources: Clark County Department of Aviation; Clark County GIS Management Office.
 Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit III-15

0 6 miles
 north

Ambient Air Quality Monitor Locations

Table III-7

Ambient Air Quality Monitoring Locations Summary – 2004 Criteria

		Pollutant Concentrations and Averaging Periods								
Location Name	AQS Code ^{1/}	Ozone (ppm)	Carbon Monoxide (ppm)	Nitrogen Dioxide (ppm)	Sulfur Dioxide (ppm)		PM ₁₀ (µg/m ³)		PM _{2.5} (µg/m ³)	
		8-Hour Average	8-Hour Average	AAM	24-Hour Average	AAM	24-Hour Average	AAM ^{2/}	24-Hour Average	AAM
Boulder City	320030601	0.083	1.4	n.a.	n.a.	n.a.	74	15.3	n.a.	n.a.
City Center	320030016	0.068	4.0	n.a.	n.a.	n.a.	84	35.1	n.a.	n.a.
Craig Road	320030020	0.075	1.8	n.a.	n.a.	n.a.	151	40.5	n.a.	n.a.
East Sahara	320030539	n.a.	4.9	0.0194	0.007	0.0	89	31.5	n.a.	n.a.
Freedom Park	320030563	n.a.	5.2	0.019	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Green Valley	320030298	n.a.	1.4	n.a.	n.a.	n.a.	84	25.2	10.7	5.59
J. D. Smith School	320032002	0.079	4.7	0.0201	n.a.	n.a.	122	39.1	20.1	8.66
Jean	320031019	0.083	n.a.	0.0035	n.a.	n.a.	71	15.9	6.9	3.44
Joe Neal School	320030075	0.088	n.a.	n.a.	n.a.	n.a.	135	29.9	n.a.	n.a.
Lone Mountain	320030072	0.079	n.a.	n.a.	n.a.	n.a.	58	20.5	n.a.	n.a.
Microscale	320030560	n.a.	n.a.	n.a.	n.a.	n.a.	114	35.7	29.6	8.83
Orr School	320031021	n.a.	4.0	n.a.	n.a.	n.a.	88	28.8	n.a.	n.a.
Palo Verde School	320030073	0.083	n.a.	0.0098	n.a.	n.a.	65	15.3	n.a.	n.a.
Paul Meyer Park	320030043	0.081	1.9	n.a.	n.a.	n.a.	86	24.1	n.a.	n.a.
South Las Vegas Blvd.	320031023	n.a.	3.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Southeast Valley	320030007	0.082	1.4	n.a.	n.a.	n.a.	119	30.7	n.a.	n.a.
Sunrise Acres School	320030561	n.a.	6.6	n.a.	n.a.	n.a.	72	29.9	25.8	8.91
Walter Johnson School	320030071	0.08	n.a.	n.a.	n.a.	n.a.	64	18.3	n.a.	n.a.
Winterwood	320030538	0.079	3.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Air Quality Standards		0.08	9.0	0.053	0.14	0.03	150	Revoked	35	15

AAM = Annual arithmetic mean

µg/m³ = Micrograms per cubic meterPM₁₀ = Particulate matterPM_{2.5} = Fine particulate matter

ppm = Parts per million

n.a. = Not available. Not all monitoring locations report concentrations of all criteria pollutants.

1/ The Air Quality System (AQS) code is an arbitrary code that identifies a particular monitoring location within a county and a database that provides ambient concentrations of criteria air pollutants at monitoring locations, primarily in cities and towns.

Source: Clark County Department of Air Quality and Environmental Management, 2005 (ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, PM₁₀) and 2007 (PM_{2.5})

Prepared by: Ricondo & Associates, Inc., April 2008

conditions. Lead concentrations are not measured by the ambient air quality monitors. Aircraft operations are one of the few remaining sources of lead emissions, which result from the use of aviation gasoline (avgas), the only remaining leaded fuel that may be commercially sold or used in the United States. The tour helicopters considered in this EA use Jet-A fuel, which does not contain lead.

3.8.4.1 Proposed Heliport Site

The ambient air quality monitor in Green Valley is the nearest monitor to the Heliport site (about 14 miles) that records CO concentrations. The Jean ambient air quality monitor is the nearest monitor (about 11 miles) that records NO₂, PM₁₀ and PM_{2.5} and ozone concentrations. The monitor in East Sahara (about 19 miles from the Heliport site) is the only monitor that recorded SO₂ concentrations in 2004. Ambient air quality concentrations for all pollutants recorded at these monitoring locations are below applicable NAAQS, with the exception of ozone, where the monitored concentration is 0.003 ppm above the federal and County standard of 0.08 ppm. However, it should be noted that an exceedance of the NAAQS requires more than a one-year comparison to the standard in order to trigger a nonattainment designation. While reported concentrations at a monitoring location may be above the NAAQS for a single year, reported concentrations for previous years show that the area is currently in attainment of the NAAQS. It should also be noted that ozone exceedances reported in the west and northwest part of the Las Vegas valley (at the Jean monitoring location, for example) are largely attributed to weather patterns which transport pollutants into the valley from Southern California [III-18].

3.8.4.2 McCarran International Airport

The nearest ambient air quality monitoring location to McCarran is at Las Vegas Boulevard South, about one mile north of McCarran. This monitor records CO concentrations. The Paul Meyer Park ambient air quality monitor is the monitoring location nearest McCarran that records ozone concentrations. The East Sahara ambient air quality monitor is the monitoring location nearest McCarran that records concentrations of NO₂, SO₂, and PM₁₀. The Microscale ambient air quality monitor is the monitoring location nearest McCarran that records concentrations of PM_{2.5}. Ambient air quality concentrations for all pollutants recorded at these monitoring locations are below applicable NAAQS.

3.8.5 Existing Helicopter Emissions Inventory, McCarran International Airport

An existing (2004) helicopter emissions inventory was developed for McCarran, which currently accommodates air tour helicopter operations. Only air tour helicopter operations were included in the emissions inventory, which was produced using the FAA's Emissions and Dispersion Modeling System (EDMS), version 4.3. The methodology used to estimate criteria pollutant emissions was consistent with the methodology described in the U.S. Department of Transportation (DOT's) *Air Quality Procedures for Civilian Airports and Air Force Bases* [III-19]. Four primary sources of emissions are directly related to heliport activity: aircraft/helicopters, ground support equipment (GSE), on-road vehicles, and stationary sources. GSE for helicopters includes fuel trucks and ground power units. On-road vehicles (automobiles) are used by passengers, employees, and others for trips on airport roadways and in airport parking areas. Stationary sources of emissions include both combustion and non-combustion sources, such as power plants and fuel tanks. Additional information regarding the modeling assumptions used to prepare the existing emissions inventory is provided in **Appendix F**.

Table III-8 presents the emissions inventory for helicopter operations at McCarran in 2004.

Table III-8

McCarran International Airport – Existing Helicopter Emissions Summary (2004)

Source	Pollutant Emissions (tons/year)					
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of sulfur (SO _x)	Particulate matter (PM ₁₀)	Fine particulate matter (PM _{2.5}) ^{1/}
Aircraft	31.072	4.880	4.399	0.531	3.839	3.839
GSE	2.240	0.829	11.333	1.712	0.623	0.604
On-Road Vehicles ^{2/}	3.202	0.366	0.337	0.008	0.743	0.005
Parking Lots	1.785	0.376	0.104	0.000	0.000	0.000
Stationary Sources	0.000	0.007	0.000	0.000	0.000	0.000
Total	38.299	6.458	16.173	2.251	5.205	4.448

Notes:

Calculated emissions include emissions associated with both Grand Canyon and Strip helicopter air tour activity. Columns may not add to totals shown because of rounding.

GSE = Ground support equipment

1/ PM_{2.5} emissions for aircraft are assumed to be equal to PM₁₀ emissions.

2/ PM₁₀ emissions for on-road vehicles include entrained road dust.

Source: Ricondo & Associates, Inc., 2008, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from the Clark County Department of Aviation and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., December 2008

3.8.6 Climate Change/Greenhouse Gases

Of growing concern is the impact of proposed projects on climate change. Greenhouse gases are those that trap heat in the earth's atmosphere. Both naturally occurring and anthropogenic (man-made) greenhouse gases include water vapor (H₂O), carbon dioxide (CO₂),⁹ methane (CH₄), nitrous oxide (N₂O), and O₃.¹⁰

Research has shown that there is a direct link between fuel combustion and greenhouse gas emissions. Therefore, sources that require fuel or power at an airport are the primary sources that would generate greenhouse gases. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as cars. Aircraft jet engines, like many other vehicle engines, produce CO₂, H₂O, NO_x, CO, oxides of sulfur (SO_x), unburned or partially combusted hydrocarbons (i.e., VOCs), particulates, and other trace compounds.

According to most international reviews, aviation emissions comprise a small but potentially important percentage of anthropogenic (human-made) greenhouse gases and other emissions that contribute to global warming. The Intergovernmental Panel on Climate Change estimates that global aircraft emissions account for about 3.5 percent of the total quantity of greenhouse gas from human

⁹ All greenhouse gas inventories measure carbon dioxide emissions, but beyond carbon dioxide different inventories include different greenhouse gases (GHGs).

¹⁰ Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also greenhouse gases, but they are, for the most part, solely a product of industrial activities. For example, chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are halocarbons that contain chlorine, while halocarbons that contain bromine are referred to as bromofluorocarbons (i.e., halons) or sulfur (sulfur hexafluoride, SF₆).

activities.¹¹ In terms of U.S. contribution, the U.S. General Accounting Office reports that aviation accounts “for about three percent of total U.S. greenhouse gas emissions from human sources” compared with other industrial sources, including the remainder of the transportation sector (23 percent) and industry (41 percent).¹²

The scientific community is developing areas of further study to enable a more precise estimate of aviation's effects on the global atmosphere. The FAA is currently leading or participating in several efforts intended to clarify the role that commercial aviation plays in greenhouse gases and climate change. The most comprehensive and multi-year program geared towards quantifying climate change effects of aviation is the Aviation Climate Change Research Initiative funded by FAA and NASA. ACCRI will reduce key scientific uncertainties in quantifying aviation-related climate impacts and provide timely scientific input to inform policy-making decisions. FAA also funds Project 12 of the Partnership for Air Transportation Noise & Emissions Reduction (PARTNER) Center of Excellence research initiative to quantify the effects of aircraft exhaust and contrails on global and U.S. climate and atmospheric composition. Finally, the Transportation Research Board's Airport Cooperative Research Program project 02-06 is preparing a guidebook on preparing airport greenhouse gas emission inventories. The results of this effort are expected to be published in late 2008.

3.9 Department of Transportation, Section 4(f) Lands

Section 4(f) of the *U.S. Department of Transportation Act of 1966*, recodified as 49 U.S.C. 303 [III-20], provides that the U.S. Department of Transportation “may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination” is made that there is no feasible and prudent alternative to the use of such land, and that such a program or project includes all possible planning to minimize any adverse effects resulting from use of the land. Pursuant to DOT Act Section 4(f), it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) applies to public parks; recreation areas; wildlife and waterfowl refuges of national, state, or local significance; or land of a historic site of national, state, or local significance, as determined by the officials having jurisdiction.

The applicability of Section 4(f) to historic and archaeological resources includes all properties listed on or eligible for listing on the National Register of Historic Places (NRHP) and archaeological sites that may be discovered during construction.

Table III-9 provides a list of national recreation areas, conservation areas, wilderness areas, and areas of critical environmental concern beneath the Overflight Area. The types of resources include wilderness areas, conservation areas, and archaeological and cultural resources whose value lies mainly in their preservation. **Table III-10** provides a list of existing and proposed public parks and recreation areas that occur beneath the Overflight Area.

¹¹ Intergovernmental Panel on Climate Change report as referenced in U.S. General Accounting Office *Environment: Aviation's Effects on the Global Atmosphere Are Potentially Significant and Expected to Grow*; GAO/RCED-00-57, February 2000, p. 4.

¹² *Ibid*, p. 14; GAO cites available EPA data from 1997.

Table III-9 (1 of 2)

Recreation, Conservation, Wilderness, Area of Critical Environmental Concern, and Resource Areas beneath the Overflight Area

Name	Jurisdictional Agency	Flight Corridor	Description
Lake Mead National Recreation Area (LMNRA)	National Park Service	Charleston, Tropicana, Henderson, and Jean	Established in 1964, the LMNRA encompasses about 1.5 million acres of land at the border of northwestern Arizona and southeastern Nevada. The LMNRA was established to provide public recreation and preserve the "scenic, historic, scientific, and other important features of the area" [III-21]. The LMNRA is a popular tourist attraction, with 9 to 10 million annual visitors. Recreational activities within the LMNRA include hiking and camping. The LMNRA also contains important archaeological, biological, and scenic resources [III-22].
Sloan Canyon National Conservation Area (NCA)	Bureau of Land Management	Henderson and McCullough	Title VI of the <i>Clark County Conservation of Public Land and Natural Resources Act of 2002</i> [III-2] established the Sloan Canyon NCA. Located south of the City of Henderson, the Sloan Canyon NCA encompasses about 48,500 acres of steep, rugged canyons and dry washes. The area provides habitat for several sensitive species including the desert bighorn sheep, chuckwalla, and desert tortoise. The area also contains numerous pictographs and rock art panels [III-23]. Recreational activities allowed at the Sloan Canyon NCA include hiking, biking, horseback riding, and camping at designated areas.
Sloan Canyon Petroglyphs	Bureau of Land Management	McCullough	The Sloan Canyon Petroglyphs is contained entirely within the boundary of the Sloan Canyon NCA. Over 300 rock art panels of cultural significance dates back to the Archaic to historic era [III-24]. Recreational activities are limited due to the terrain and prohibition of off-road vehicles; hiking is allowed.
North McCullough Wilderness Area	Bureau of Land Management	Henderson and McCullough	Established under Title II of the <i>Clark County Conservation of Public Land and Natural Resources Act of 2002</i> [III-2], the North McCullough Wilderness Area consists of about 14,763 acres of wilderness area on the northwest side of the Northern McCullough Mountain Range. This wilderness area is entirely contained within the Sloan Canyon NCA. The North McCullough Wilderness Area contains scenic, cultural, archaeological, and biological resources. Plant species in the area includes the Mojave Desert community vegetation (e.g., Joshua trees and creosote bush). Wildlife species that inhabit the wilderness area includes desert bighorn sheep, mule deer, quail, Gila monster, and desert tortoise. Recreational activities are limited due to the rocky terrain and prohibition of off-road vehicles [III-25].
Black Canyon Wilderness Area	National Park Service	Jean and McCullough	The Black Canyon Wilderness Area was also established under Title II of the <i>Clark County Conservation of Public Land and Natural Resources Act of 2002</i> . This 17,220-acre wilderness is located entirely within the boundary of the Lake Mead National Recreation Area between the Colorado River and Boulder City south of Highway 93. The area provides habitat for various wildlife including the desert tortoise and the desert bighorn sheep. The terrain of this wilderness area range from 600 to 3,000 feet. The area is generally vegated with the Mojave Desert scrub, including creosote bush and other low desert shrubs. [III-26]
Rainbow Gardens Area of Critical Environmental Concern	Bureau of Land Management	Charleston and Tropicana	Rainbow Gardens is located in the eastern Las Vegas region between the City of Las Vegas and the LMNRA, and encompasses the Sunrise Mountain Natural Area. This 37,620-acre area was designated as an Area of Critical Environmental Concern (ACEC) by the BLM in 1998, and received federally protected status in 1998 due to the "geological, scientific, scenic, cultural, and sensitive plant values" [III-27].

Table III-9 (2 of 2)

Recreation, Conservation, Wilderness, Area of Critical Environmental Concern, and Resource Areas beneath the Overflight Area

Name	Jurisdictional Agency	Flight Corridor	Description
River Mountains Area of Critical Environmental Concern	Bureau of Land Management	Tropicana and Henderson	The River Mountains, designated as an ACEC by the BLM, is located north of the City of Boulder City, between the City of Henderson and the LMNRA. This 5,600-acre area provides for many recreational activities as well as habitat for various species, including bighorn sheep [III-27].
Bootleg Canyon Recreation Area	City of Boulder City	Henderson	The Recreation Area was formally established to provide for management of recreational activities and the preservation of natural resources, which was being used by visitors for recreational purposes (e.g., hiking and shooting). Trails and other recreational facilities have been planned as part of a recent master plan completed by the City of Boulder City. The FAA also maintains navigational radars atop the Red Mountains within the Bootleg Canyon Recreation Area. [III-28]
Boulder City Conservation Easement Area	City of Boulder City	Jean	The City of Boulder City granted a conservation easement to Clark County in 1995, for the conservation and recovery of the desert tortoise. The conservation easement was granted on about 86,000 acres of land within the jurisdictional boundary of Boulder City in the Eldorado Valley [III-29].
Wetlands Park	Clark County, Nevada	Tropicana	The Clark County Wetlands Park, located south of the Rainbow Gardens ACEC and at the end of East Tropicana Avenue, is a 2,900-acre nature preserve that flows past the Frenchman's Mountain and into Lake Mead [III-29]. The Wetlands Park serves multiple functions, including public education and conservation of environmentally sensitive lands, and habitat for endangered and threatened species, recreation (e.g., bird watching and hiking), and mitigation in partnership with participating federal agencies under the Clark County Multiple Species Habitat Conservation Plan.

Sources: Various sources, as noted above.

Prepared by: Ricondo & Associates, Inc., April 2008

Table III-10

Local Parks and Recreation Centers beneath the Overflight Area

Corridor Name	Local Parks and Recreation Centers Beneath Overflight Area
Charleston	Rafael Rivera Park Stewart Place Park Joe Shoong Park
Tropicana	Paradise Park and Community Center Whitney Park and Community Center
Henderson	Sonata Park Vivaldi Park Puccini Park Allegro Park Arroyo Santa Rosa Park (proposed) Coronado Heights Park (proposed) Sunridge Park Mission View Park Cactus Wren Park (proposed) South Fork Trailhead (proposed) Paseo Vista Park Promenade at Liberty Point Discovery Park Amador Vista Park (proposed) Paseo Verde Park Dos Escuelas Park Mountain View Park Cornerstone Lake Community Park (proposed) Reunion Trails Community Park (proposed) Acacia Park Demonstration Garden Black Mountain Vista Trailhead (proposed) Burkholder Baseball Field and Park Titanium Ballfield Downtown Rec Center and Pool Morrell Park Cinnamon Ridge Park El Centro (proposed) Roadrunner Park Downs Linear Park Saguaro Park (proposed) Equestrian Park Boulder Creek Park (proposed)
McCullough	None
Jean	None
Strip Railroad	Chester S. Stupak Park

Sources: Clark County Department of Parks and Recreation, City of Las Vegas Department of Leisure Services, City of Henderson Parks and Recreation Department, Boulder City Parks and Recreation Department, August 2005

Prepared by: Ricondo & Associates, Inc., April 2008

3.10 Historic, Architectural, Archaeological, and Cultural Resources

The *National Historic Preservation Act of 1966* [III-30], as amended, establishes the National Historic Preservation Program within the National Park Service (NPS), and includes directives for the identification, assistance, and protection of historic properties. The *National Historic Preservation Act* also establishes the Advisory Council on Historic Preservation to advise the President and Congress on historic preservation matters, recommend measures to coordinate federal historic preservation activities, and comment on federal actions affecting properties included in or eligible for inclusion in the National Register of Historic Properties (NRHP).

Properties listed in the NRHP must be at least 50 years old unless the historical and cultural property is deemed to be of exceptional significance. Properties listed or eligible for inclusion in the NRHP are those that:

- Are associated with events that have made a significant contribution to the broad patterns of our history; or
- Are associated with the lives of persons significant in our past; or
- Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Properties eligible for inclusion in the NRHP must be afforded the same considerations as historic properties listed, as mandated under Section 106 of the National Historic Preservation Act, which requires coordination with the State Historic Preservation Officer (SHPO) and/or the Tribal Historic Preservation Officer, as appropriate.

The *Archaeological and Historic Preservation Act of 1974* [III-31], as amended, requires the survey, recovery, and preservation of significant and prehistoric data that may be destroyed or irreparably lost as a result of a federal, federally funded, or federally licensed project. The *Archaeological Resources Protection Act of 1979* [III-32], as amended, requires federal agencies to identify potential archaeological sites on federal lands and prohibits unauthorized excavation of archaeological resources on federal or tribal lands. Certain historical properties are also considered under Section 4(f) of the Department of Transportation Act as discussed in Section 3.9.

3.10.1 Proposed Heliport Site

A combination of Class I literature reviews and Class III pedestrian surveys of historic, architectural, archaeological, and cultural resources were completed on the proposed Heliport site; a one mile radius around the Heliport site was conducted in 2004 [III-33]; the utility corridors, as described as the Area of Disturbance in Section 3.2.1, was surveyed in 2007 [III-34]. Exhibit III-1 shows the surveyed areas for the heliport and utility corridor.

The 2004 literature review of historic sites and pedestrian survey of the Heliport site, including a one-mile radius around the site, revealed two NRHP-eligible and three-ineligible sites within a one-mile radius of the site; however, no cultural resource sites were identified within the boundary of the 229-acre Heliport site.

A similar literature search and pedestrian survey in 2007 of the utility corridor revealed three NRHP-eligible historic sites, including a railroad and construction camp (Sutor site), historic

highway (Arrowhead Highway), and a dugout. These recorded cultural sites are all historic and appear to be associated with construction of the transportation corridor.

3.11 Fish, Wildlife, and Plants

The *Sikes Act of 1960*, as amended in 1974 [III-35], authorizes states to prepare statewide wildlife conservation and rehabilitation programs. The *Migratory Bird Treaty Act of 1918*, as amended, [III-36] protects all migratory birds. Under Nevada's Department of Conservation and Natural Resources, the Nevada Natural Heritage Program (NNHP) staff collect and maintain a comprehensive inventory of Nevada's endangered and threatened species and the habitats of species and biological communities. The BLM sensitive species designation is applied to species that are not already federally listed. Generally, this designation is applied to those species that occur on BLM managed land or is State-listed but can be better conserved through BLM designation. According to the BLM Manual 6840.06 C [III-37], the BLM policy is to provide the same level of protection as the U.S. Fish and Wildlife Service (USFWS) designation of "candidate species".

3.11.1 Environmental Setting

3.11.1.1 Wildlife

Desert wildlife species observed during field surveys include small reptiles, birds, and mammal species suited for the dry creosote bush community, common to the Area of Disturbance, such as: (1) reptiles – Mojave green rattlesnake (*Crotalus scutulatus*) and the side-blotched lizard (*Uta stansburiana*); (2) birds – mourning dove (*Zenaida macroura*), sage sparrow (*Amphispiza belli*), common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), and the lesser nighthawk (*Chordeiles acutipennis*); and (3) mammals – western cottontail (*Sylvilagus auduboni*), black tailed jackrabbit (*Lepus californicus*), white-tailed antelope ground squirrel (*Amnospermophilus leucurus*), and coyote (*Canis latrans*).

3.11.1.2 Vegetation

Vegetative cover on the Area of Disturbance consists primarily of the Mojave Desert shrubland [III-38]. Biological field surveys revealed creosote-bursage and blackbrush communities at the eastern portion of the Heliport site, both of which are commonly in the Mojave Desert and in the Las Vegas region. Dominant plants in the area include creosote bush (*Larrea tridentata*), which is the most characteristic plant in the Mojave Desert, white bursage (*Ambrosia dumosa*), Mojave yucca (*Yucca schidigera*), desert trumpet (*Eriogonum inflatum*), and Mormon tea (*Ephedra nevadensis*).

3.11.1.3 Special Status Species

A variety of other sensitive biotic species are also present in Clark County and potentially at the Area of Disturbance. These species are considered special status or sensitive species by the BLM or are included on the sensitive species list for Nevada, which is maintained by the NNHP. These species, their current status with the State of Nevada and the BLM, and their potential to occur at the Area of Disturbance is provided in **Table III-11**.

Signs of desert bighorn sheep, a BLM-sensitive specie, were observed along the eastern edge of the Heliport site, adjacent to the far western boundary of the Sloan Canyon NCA. The eastern boundary of the Heliport site also provides limited potential habitat for desert bighorn sheep. No desert bighorn sheep were observed and it is unlikely that bighorn sheep would travel onto the Heliport site. Construction of the Heliport would discourage desert bighorn sheep from using this area of limited potential habitat.

No State-listed or BLM-sensitive reptiles were found within the Area of Disturbance during the biological field survey. However, potentially suitable habitat for the chuckwalla, a BLM-sensitive specie, was found within the Area of Disturbance.

Two State-listed and BLM-sensitive birds were observed during the biological field survey: the loggerhead shrike and the western burrowing owl.

No State-listed or BLM-sensitive plant species were found on the Heliport site during the biological field survey. However, potential habitat for three BLM-special status plant species was observed within the Area of Disturbance for the *Penstemon* plant including the rosy two-tone beardtongue, white-margined beardtongue, and yellow two-tone beardtongue.

Table III-11

Nevada State and BLM Sensitive Plant and Wildlife Species within Clark County, Nevada

Common Name	Scientific Name	Status		Potential Habitat within Area of Disturbance
		Nevada ^{1/}	BLM ^{2/}	
Bird				
Loggerhead shrike	<i>Lanius ludovicianus</i>	YES	N	Area of Disturbance
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	YES	N	Area of Disturbance
Mammal				
Bighorn sheep	<i>Ovis canadensis</i>	n.a.	N	Area of Disturbance
Plant				
Las Vegas Bearpoppy	<i>Arctomecon californica</i>	CE	S	None
Mojave Milkvetch	<i>Astragalus mohavensis</i> var. <i>mohavensis</i>	n.a.	S	None
Rosy two-tone beardtongue	<i>Penstemon bicolor</i> ssp. <i>roseus</i>	n.a.	N	Area of Disturbance
Sheep fleabane	<i>Erigeron ovinus</i>	n.a.	N	None
Spring Mountains milkvetch	<i>Astragalus remotus</i>	n.a.	N	None
White-margined beardtongue	<i>Penstemon albomarginatus</i>	n.a.	N	Area of Disturbance
Yellow two-tone beardtongue	<i>Penstemon bicolor</i> ssp. <i>bicolor</i>	n.a.	N	Area of Disturbance
Reptile				
Desert tortoise ^{3/}	<i>Gopherus agassizii</i>	YES	S	Area of Disturbance
Chuckwalla	<i>Sauromalus ater</i>	n.a.	N	Area of Disturbance
Banded gila monster	<i>Heloderma suspectum cinctum</i>	YES	N	None

Notes:

n.a. = Not applicable

1/ Nevada status: YES = Species protected under NRS 501; CE = Critically Endangered (NRS 527.260-.300)

2/ BLM status: S = Nevada Special Status Species; N = Nevada Special Status Species – designated Sensitive by State Office

3/ The desert tortoise is also a federally listed reptile. See Section 3.12 for discussion of this specie.

Sources: SWCA Environmental Consultants, based on data obtained from the Nevada Natural Heritage Program, 2006 [III-39] and 2007 [III-40]

Prepared by: Ricondo & Associates, Inc., April 2008

3.12 Federally Listed Threatened and Endangered Species

Endangered and threatened species are identified and protected by the *Endangered Species Act of 1973* [III-41], as amended. Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) about any federal action that may affect a federally protected species. The requirement applies to all federal land management decisions and actions. Such consultations require preparation of a biological evaluation or assessment by the federal agency responsible for implementing or approving the action.

The term "endangered species" refers to any member of the animal kingdom (e.g., mammal, fish, or bird) or plant kingdom (e.g., seeds, roots, etc.) that is in danger of extinction throughout all or any portion of its range. The term "threatened species" refers to those members of the animal or plant kingdom that are likely to become endangered within the foreseeable future. "Candidate species" are plants and animals on which the USFWS has sufficient information regarding biological status and threats to propose them as endangered under the Endangered Species Act, but development of a proposed listing regulation is precluded by other, higher priority listings. Candidate species do not receive statutory protection under the Endangered Species Act. The potential for long-term loss of wildlife is addressed by the *Fish and Wildlife Coordination Act* [III-42]. Coordination with appropriate agencies is required if a proposed action has the potential to affect or eliminate potential wildlife habitat.

3.12.1 Environmental Setting

A biological field survey of the Heliport site was conducted between August 27-29, 2004 [III-43]; pedestrian surveys of the utility corridors was completed between and October 25-November 9, 2006 [III-38]. An overview of wildlife, plants, and special status species in the Area of Disturbance is provided below. Information presented in this section was collected from available documentation, aerial photography, and field surveys.

3.12.1.1 Proposed Heliport Site

The USFWS lists 17 species within Clark County as threatened, endangered, or candidate species, as presented in **Table III-12**. Of these listed species, the threatened desert tortoise (*Gopherus agassizii*) is the only species observed within the Area of Disturbance. Biological surveys of the Area of Disturbance and additional areas revealed over 400 signs of the desert tortoise, including live desert tortoises, on the site and in the vicinity of the utility corridors. Friable soils conducive to burrowing for the federally listed desert tortoise were also observed throughout the central and western portions of the Heliport site.

Table III-12

U.S. Fish and Wildlife Service Listed Endangered, Threatened, and Candidate Species within Clark County, Nevada

Common Name	Scientific Name	Status	Potential Habitat within Area of Disturbance
Amphibian			
Relict leopard frog	<i>Rana onca</i>	Candidate	None
Bird			
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	None
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Candidate	None
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	Endangered	None
Fish			
Bonytail chub	<i>Gila elegans</i>	Endangered	None
Humpback chub	<i>Gila cypha</i>	Endangered	None
Lahontan cutthroat trout	<i>Oncorhynchus clarki henshawi</i>	Threatened	None
Moapa dace	<i>Moapa coriacea</i>	Endangered	None
Pahrump poolfish	<i>Empetrichthys latos</i>	Endangered	None
Razorback sucker	<i>Xyrauchen texanus</i>	Endangered	None
Virgin River chub	<i>Gila seminude</i>	Endangered	None
Woundfin	<i>Plagopterus argentissimus</i>	Endangered	None
Plant			
Slender moonwort	<i>Botrychium lineare</i>	Candidate	None
Las Vegas buckwheat	<i>Eriogonum corymbosum var. nilsii</i>	Candidate	None
Reptile			
Desert tortoise	<i>Gopherus agassizii</i>	Threatened	Area of Disturbance

Source: SWCA Environmental Consultants, based on data obtained from the Nevada Natural Heritage Program, 2007

Prepared by: Ricondo & Associates, Inc., April 2008

3.13 Floodplains and Floodways

In Executive Order 11988, *Floodplain Management* [III-44], floodplains are defined as the lowland and relatively flat areas adjoining inland and coastal waters. At a minimum, floodplains include any area subject to a one percent or greater chance of a flood in any given year (e.g., the area that would be inundated by a 100-year flood). The Executive Order further directs federal agencies to take action to reduce the risk of flood loss; to minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains.

The location of the Heliport site and McCarran relative to flood zones, as defined by the Federal Emergency Management Agency (FEMA), is discussed below.

3.13.1 Proposed Heliport Site

Surface water occurs on the Heliport site only as a result of runoff during rainstorms. As shown on **Exhibit III-16**, no part of the Heliport site is within or immediately adjacent to a 100-year flood zone. The 100-year flood zone nearest the Heliport site is about 4.3 miles to the northwest in the City of Henderson. Portions of the Area of Disturbance (communications utility extension) north of Jean Airport are within Flood Zone A. Flood Zone A is defined as an area inundated by 100-year flooding, for which no base flood elevations have been determined [III-45].

3.13.2 McCarran International Airport

Surface water occurs on McCarran only as a result of runoff during rainstorms. As shown on **Exhibit III-17**, no part of airport property is within or immediately adjacent to a 100-year flood zone. The 100-year flood zone nearest McCarran is about 0.7 mile northwest of Runway 1L-19R.

3.14 Water Quality

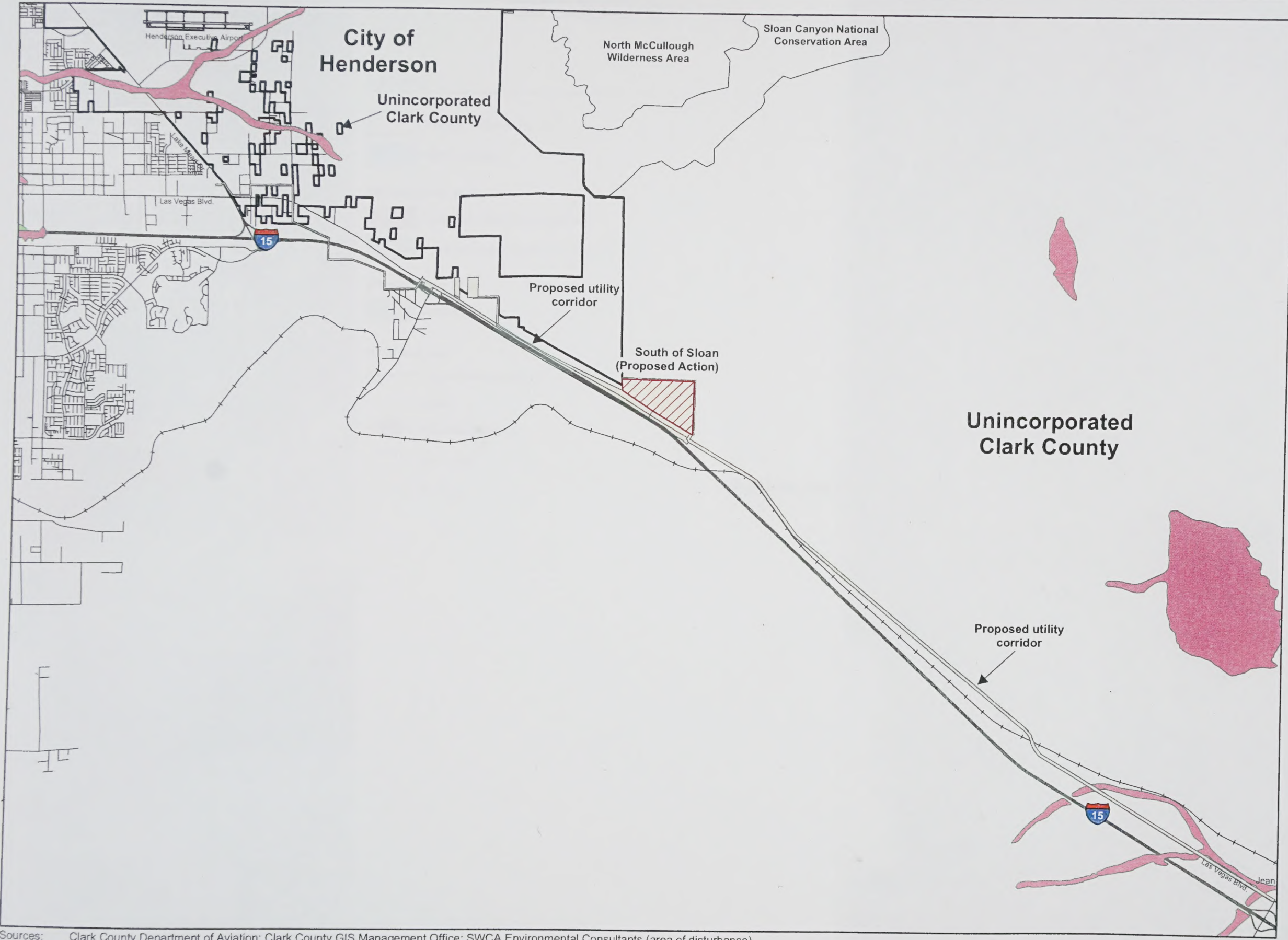
The *Federal Water Pollution Control Act of 1972* [III-46], as amended (the Clean Water Act), requires airport sponsors to establish water quality standards and to control discharges into surface and subsurface waters. Particular concerns include the preservation of existing drainage, the protection of aquifers from fuel spills and aircraft washing runoff, and airport construction activities. The *Safe Drinking Water Act of 1974* [III-47] regulates the quality of drinking water and establishes public drinking water health standards.

Industrial plants, including airports, are required to obtain stormwater permits under the 1987 amendments to the Clean Water Act [III-48]. The National Pollutant Discharge Elimination System (NPDES) permit requires: (1) submission of information regarding existing programs to control pollutants and (2) field screening of major outfalls to detect improper discharges. All discharges of stormwater runoff must be identified and characterized, including those containing deicing fluids, liquid fuels, and chemicals used for maintenance.

3.14.1 Groundwater

In Clark County, groundwater is found in basin fill sediments, carbonate rocks, and noncarbonate rocks. These general categories are known as hydrogeologic units. Groundwater is typically withdrawn from basin fill and carbonate rocks because such formations are permeable, while noncarbonate rocks are generally less permeable. Consequently, noncarbonate rocks generally transmit less water and are, therefore, not major sources of groundwater in Southern Nevada other than for small community systems or individual domestic supplies.

The Nevada Division of Water Resources regulates water well drilling in Nevada and maintains a database of wells drilled in Nevada [III-49]. There are no records of wells drilled near or adjacent to the Heliport site. The closest well drilled in the vicinity of the Heliport site is located north in Sloan, Unincorporated Clark County. This well was drilled on February 1999 to a depth of 604 feet by the Las Vegas Karting Center [III-50]. Clark County drilled a well on June 10, 1998, in the vicinity of McCarran; approximate depths to water recorded in the drilled well ranged from 27 to 33 feet.



Legend

-  Proposed heliport site area
-  Area of disturbance

Note: The area of disturbance includes areas that could be affected by construction or the extension of utilities to the site.

100-year flood zones

-  Zone A: No depths determined

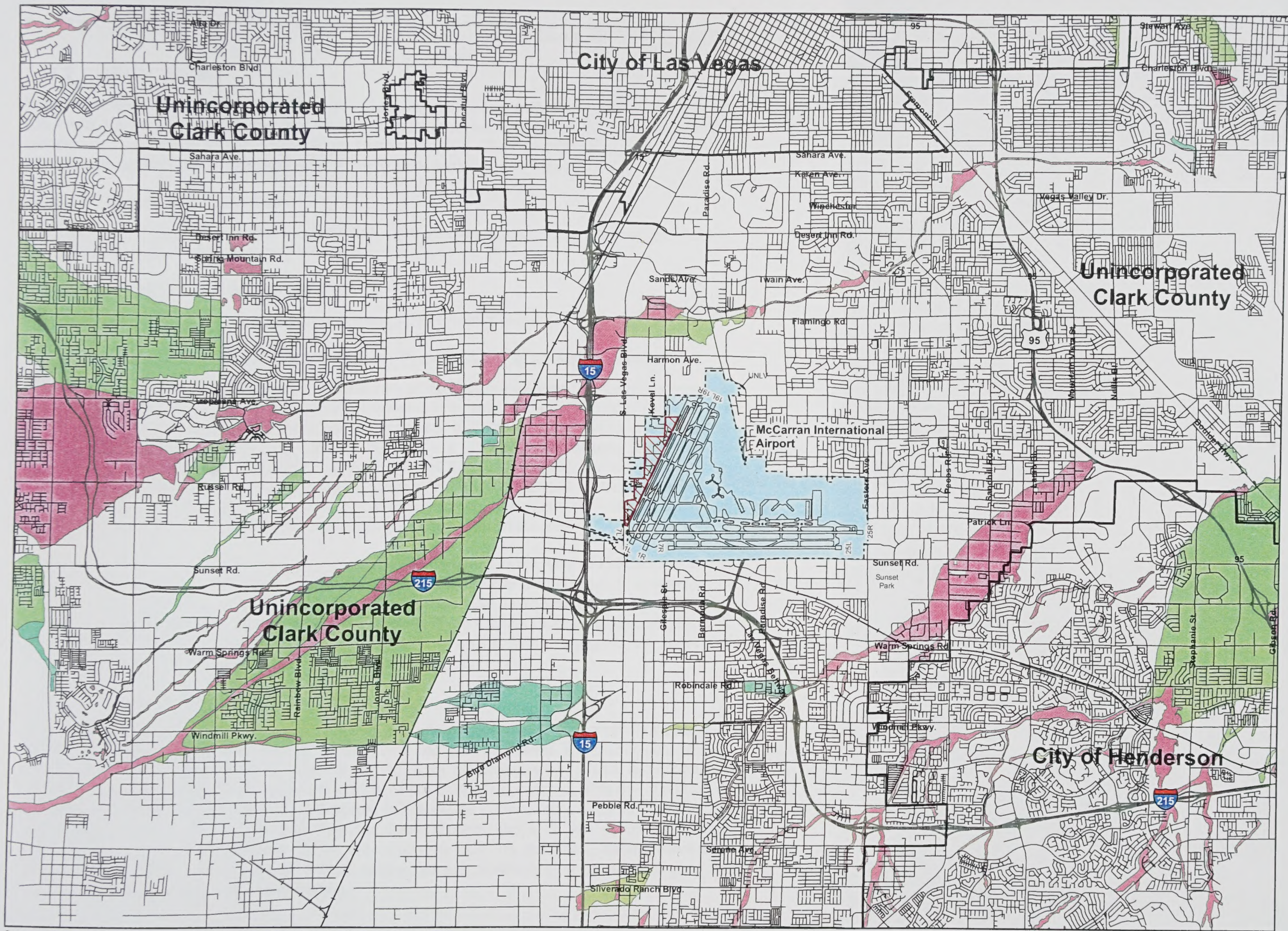
Other features

-  Jurisdictional boundary
-  Street
-  Interstate highway
-  U.S. route
-  Railroad

Sources: Clark County Department of Aviation; Clark County GIS Management Office; SWCA Environmental Consultants (area of disturbance).
Prepared by: Ricondo & Associates, Inc., April 2008.



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Legend

- Existing heliport site area
- Airport property

100-year flood zones

- Zone A: No depths determined
- Zone AO: Flood depths of 1 to 3 feet

500-year flood zone

- Zone X

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Sources: Clark County Department of Aviation; Clark County GIS Management Office.
Prepared by: Ricondo & Associates, Inc., April 2008.



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3.14.2 Water Supply

Water from the Colorado River stored in Lake Mead supplies 90 percent of the potable water to the Las Vegas Valley and participating surrounding communities via a municipal water system owned and operated by the Las Vegas Valley Water District [III-50]. District-owned wells drawing from underground aquifers provide supplemental water to meet peak summer demands.

3.14.2.1 Proposed Heliport Site

The Las Vegas Valley Water District potable water system currently does not extend to the Heliport site. Potential sources of water supply are discussed in Section 4.14.

3.14.2.1 McCarran International Airport

The Las Vegas Valley Water District provides water service to McCarran.

3.15 Hazardous Materials, Pollution Prevention, and Solid Waste

According to FAA Orders 1050.1E and 5050.4B, two primary statutes regarding hazardous materials and/or solid waste must be considered when construction and operation of new facilities are proposed: (1) the *Resource Conservation and Recovery Act of 1976* (RCRA) [III-51], as amended by the *Federal Facilities Compliance Act of 1992* [III-52], and (2) the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) [III-53], as amended by the *Superfund Amendments and Reauthorization Act of 1986* (SARA) [III-54]. The purpose of the RCRA is to regulate active and future facilities that may generate, transport, treat, store, or dispose of hazardous materials. CERCLA regulates abandoned and historical waste sites.

Information presented in this section represents existing conditions at the Area of Disturbance for the Heliport site based on the Phase I Environmental Site Assessments (ESAs) completed in September 2005 [III-55]. Utility extensions were subsequently investigated in December 2007 [III-56]. As specified in the national standard¹³ [III-57], Phase I ESAs include reviews of historical and current records, visual inspections of the site, interviews with property managers, and reviews of surrounding geology (e.g., soil type and groundwater flow).

3.15.1 Proposed Heliport Site

A Phase I ESA was conducted for the Area of Disturbance to assess the potential presence of environmental hazards [III-55]. Review of historical and current federal, State, and local records revealed no sites of environmental concern on the Area of Disturbance. Field reconnaissance revealed no contamination, solid waste, or sources of environmental concern, with the exception of the south edge of the Heliport site, which has been utilized as an informal shooting range and for off-road vehicle sports. Due to the lead from the spent shotgun shells, it was determined that a recognized environmental condition (REC) was likely to exist on the site. Recommendations detailed in the Phase I ESA included further studies before construction begins to determine the degree of potential surface lead contamination.

¹³ The American Society for Testing and Materials (ASTM) Standard E-1527-00, which defines the national standard for conducting Environmental Site Assessments, was applicable at the time the ESA was conducted in September 2005. ASTM E 1527-05 is applicable for ESAs conducted after November of 2006.

Review of historical and current records maintained by federal¹⁴ and State¹⁵ agencies revealed no sites of environmental concern present on the site. Field reconnaissance of the Area of Disturbance showed: no transformers, no radon hazard, no asbestos nor lead-based paint, and no signs of hazardous substance containers (e.g., drums).

There is no solid waste collection and no wastewater (e.g., sewage) service at the Heliport site because the land is currently undeveloped. According to the Nevada Office of Solid Waste, there are no landfills or solid waste disposal sites within a 0.5-mile of the Area of Disturbance.

3.15.2 McCarran International Airport

Generally, the west side of McCarran is developed with airport-related facilities, such as hangars and helipads. Some aircraft maintenance is conducted on site, which includes the use of engine fluids and oils.

Republic Services of Southern Nevada, a private company, collects solid waste generated at McCarran and transports it to the Apex Regional Landfill, located about 18 miles northwest of the City of Las Vegas. The landfill, which opened in October 1993, consists of 1,202 acres and has a refuse capacity of 784 million cubic yards. Currently, 6,940 tons per day of solid waste can be processed at the facility, which has an expected useful life of more than 40 years.

The Clark County Water Reclamation District provides sanitary sewage service to unincorporated areas of Clark County, including McCarran.

3.16 Visual Resources

The BLM uses a Visual Resource Management (VRM) system to inventory and manage visual resources on public lands. The primary objective of the VRM system is to maintain the existing visual quality of BLM-managed public lands and to protect unique visual resources. The VRM system uses four classes to describe different degrees of modification allowed to the landscape. VRM class assignments are based on the area's visual sensitivity and are a result of a combination of factors, including the degree of visitor interest in and public concern for the area's visual resources, the area's public visibility, the level of use by the public, and the type of visitor use the area receives [III-58]. Per the BLM Manual Handbook H-8410-1, *Visual Resource Inventory* [III-59], descriptions and the objective of the four classes are as follows:

- Class I – The management objective is to “preserve the existing character of the landscape.” The level of change to the landscape should be minimal and must not attract attention. Class I provides for natural ecological change to the landscape and very limited management activity. Examples of Class I areas include wilderness and areas of critical environmental concern.

¹⁴ Federal records reviewed include: National Priorities List/CERCLA Site Listing for Nevada; Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Site and Event Listing for Nevada; the U.S. EPA Resource Conservation and Recovery Information System (RCRIS) Master Facility List for Nevada; Toxic Release Information System; the Emergency Response Notification System; and the Department of Environmental Quality Hazardous Spills Database.

¹⁵ State records reviewed include: Nevada Office of Solid Waste, List of Solid Waste Land Disposal Sites; and the Nevada Division of Environmental Protection List of Registered Underground Storage Tanks and Leaking Underground Storage Tanks.

- Class II – The management objective is to “retain the existing character of the landscape.” The level of change to the landscape should be low by repeating the basic elements of form, line, color, and texture found in the predominant natural features of the landscape. Management activities in a Class II designated area may be seen but not attract attention to the casual observer.
- Class III – The management objective of this class is to “partially retain the existing character of the landscape.” Management activities may attract attention but should not dominate the landscape. Moderate changes to the landscape are allowed. However, changes to the landscape should repeat the basic elements found in the predominant natural features, such as the form, line, color, and texture.
- Class IV – The management objective is to provide for activities which require “major modification of the existing character of the landscape.” The level of change to the landscape can be high. Such management activities may dominate the landscape and be the major focus of attention to the casual viewer.

Once an area has been assigned a VRM class, the management objectives of that class can be used to analyze and determine visual impacts of proposed activities and to gauge the amount of disturbance an area can tolerate before it exceeds the visual management objectives [III-60]. The *Las Vegas Resource Management Plan/Environmental Impact Statement* [I-18] has assigned lands in the project area as VRM Class III. The VRM Class III management objective allows actions that may attract attention, but do not dominate the view of the casual observer.

3.16.1 Proposed Heliport Site

The dominant landscape characteristic within and surrounding the proposed project area is the steep rocky hillside and wide alluvial fans extending from the hillside to the valley floor. Vegetation typical of the Mojave Desert environment occurs throughout the Area of Disturbance. Mojave yucca is interspersed with creosote bush, white bursage and other shrubs and grasses that contribute to the scenic quality of the area. Naturally exposed buff and tan-colored soils also add scenic contrasts and scenic quality to the area.

The Area of Disturbance is mostly undeveloped, with the exception of I-15 and Las Vegas Boulevard South. No developments are visible south of the proposed Heliport site. Billboards and industrial development are visible north of the Heliport site along I-15 as well as the extensive development of Las Vegas region, including the community of Sloan, Nevada.

3.16.2 Key Observation Points and Contrast Rating

The BLM uses a contrast rating system that evaluates effects of proposed projects on visual resources to determine whether proposed projects conform to VRM class objectives. Contrast rating is evaluated from critical viewpoints, known as Key Observation Points (KOPs), which are usually selected along commonly traveled routes, such as highways, access roads, or hiking trails. A KOP can either be a single point of view that an observer/evaluator uses to rate an area or panorama, or a linear view along a roadway, trail, or river corridor. Factors considered in selecting KOPs include:

- Angle of observation or slope of the Heliport site
- Spatial qualities of the landscape

- Number of potential viewers of the Area of Disturbance
- Length of time that the project would be in view
- Relative size of the proposed project
- Light conditions

The primary public views of the proposed project would be from two travel routes, I-15 and Las Vegas Boulevard South. KOPs were selected to represent effects of the project as seen from public areas that permit a high degree of visibility of the project area. The degree of visual contrasts was rated at each KOP, based on the form, line, color, and texture changes between the existing landscapes and how the landscape would look after construction of the Heliport site and associated utilities. The contrast ratings were recorded on a BLM Contrast Rating Form [III-61]. Two KOPs were selected for the proposed project.¹⁶

3.16.2.1 KOP 1 – Las Vegas Boulevard South

This view was chosen because it is similar to the view that vehicle passengers might see of the project area while traveling south along Las Vegas Boulevard South. Foreground views are of the rolling, sparsely vegetated, and gravelly road shoulder bordered by low growing desert vegetation. Tan to buff-colored desert soil is visible, and provides color and texture contrasts with the shrubby creosote bush and dry, brown grasses. Middleground views are of the rolling topography and alluvial fans extending down from the steep, rocky hillside. The low-growing, shrubby desert vegetation is interspersed with Mojave yucca that breaks up the uniformity of desert vegetation. Background views are not visible from this KOP because the rocky and rugged topography of the middleground screens the distant mountain ranges of the background to the south and east of the project area.

3.16.2.2 KOP 2 – Interstate 15

This view was chosen because it is similar to the view that vehicle passengers might see of the project area while traveling north along I-15. Foreground views are of the Interstate, Las Vegas Boulevard South, and the sparsely vegetated and gravelly road shoulder and fence line bordered by low growing desert vegetation. Tan to buff-colored desert soil is visible, and provides color and texture contrasts with the shrubby green creosote bush and tan grasses. Middleground views are similar to the foreground views; the reflective surface of the I-15 extends to the north and large reflective signboards are visible along the road shoulder of I-15. Gently rolling topography and alluvial fans with uniformly spaced, low-growing desert vegetation are visible to the east. Background views are of the dense development common throughout the Las Vegas region to the north.

3.17 Past, Present, and Reasonably Foreseeable Future Actions

Per FAA Order 1050.1E paragraph 405e, past, present, and reasonably foreseeable future actions should be considered in the evaluation of the cumulative effects (40 CFR 1508.7) of these actions on the affected environment. The Council on Environmental Quality regulations for implementing NEPA requires evaluation of cumulative effects of a proposed project and the no action alternative. **Table III-13** provides a summary of projects that have been completed, currently ongoing, and projects that are anticipated to be completed in the foreseeable future within one mile of the Heliport site or along or adjacent to the proposed utility corridors, along with other notable known projects near the Heliport site that could have the potential to result in cumulative effects with construction and operation of the proposed Heliport. The assessment of cumulative effects is presented in

¹⁶ See Exhibit IV-13 in Section 4.17, Visual Resources.

Section 4.22. As described in that section, the period considered for past actions is 1995-2006, the period considered for currently ongoing actions is 2007-2008, and the period considered for reasonably foreseeable future actions is 2009-2020. As can be seen on Exhibit I-4, although Clark County as a whole has experienced rapid growth and associated development, there has not been significant development near the proposed Heliport site nor along the proposed right-of-way for the utility corridors. A critical element of site selection was to move helicopter operations away from existing residential development.

Table III-13 (1 of 2)**Summary of Past, Present, and Reasonably Foreseeable Future Actions**

Project Name and Location	Description	Current Status
Past (1995 – 2006)		
Annex of land by the City of Henderson, City of Henderson, Nevada	The City of Henderson annexed about 3,500 acres to the west of the City, creating West Henderson Planning Area. South County zoning and planned land use designations currently apply to this area.	Annexed in 2007.
GoKart Facility	The 49-acre site was originally developed in approximately 1994 or 1995 for recreational uses. Development on the site includes a go-kart track and facilities, several structures, and billboards. This site had originally been identified as the preferred site for the Heliport.	The Clark County Department of Aviation acquired the site in July 2003. No activity occurs on the site as of September 4, 2006.
Vehicle Storage and Billboard Site	A 4.5-acre, fenced area used for vehicle storage and a billboard.	Unknown.
Present (2007 – 2008)		
Bermuda 2745 Zone Pumping Station Discharge Pipeline Phase II and Sloan 2745 Zone Reservoir Site, Sloan, Unincorporated Clark County	The Las Vegas Valley Water District will construct approximately 18,400 linear feet of 48-inch diameter pipeline and a 10 million gallon below grade concrete reservoir to provide water services to areas in South Clark County.	Construction is approved and anticipated to begin in 2008. ^{1/}
Reasonably Foreseeable Future (2009 – 2020)		
I-15 South Project	Nevada Department of Transportation would expand the existing 6-lane freeway, between Sloan Road to Tropicana Avenue interchanges, to a 10-lane freeway.	Construction is estimated to begin in 2009. ^{1/}
Southern Nevada Supplemental Airport ^{2/}	A Southern Nevada Supplemental Airport in the Ivanpah Valley.	FAA is currently in the process of preparing an Environmental Impact Statement. ^{1/}
Rinker Materials West, LLC and Service Rock Products Corp. ^{2/}	Proposed project, located about 3 miles north of Heliport site, would involve construction and operation of open pit quarries, development facilities such as asphalt hot plant, water supply well, access roads, and support facilities to provide aggregate materials for ongoing construction in Clark County. Mining and associated facilities would operate for about 30 years, removing approximately 100 million tons of materials from an approximately 800-acre site.	BLM published a Notice of intent to prepare an Environmental Impact Statement in the Federal Register on June 11, 2007 and environmental analysis is ongoing. ^{1/} Based upon scoping materials, the project could begin in 2010.

Table III-13 (2 of 2)

Summary of Past, Present, and Reasonably Foreseeable Future Actions

Project Name and Location	Description	Current Status
Reasonably Foreseeable Future (2009 – 2020) cont.		
Development within the West Henderson Planning Area, City of Henderson, Nevada	It is anticipated that development of residential and supporting commercial facilities and infrastructure will occur within the area annexed by the City of Henderson, as described under Past Actions, above.	Land annexed as of 2007 – no specific plans known at this time.

Notes:

- 1/ Project is subject to separate NEPA review and approval.
- 2/ Notable project that is not located within the specific spatial boundary identified as the area within one-mile of the proposed Heliport site or along or adjacent to the utility corridor, but identified as having the potential for consideration of cumulative effects for this EA.

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., based on information from the *Airport Capital Improvement Program (ACIP)* — 2004-2009, 2004, 2006-2010, 2007, and 2008-2012, 2007.

Prepared by: Ricondo & Associates, Inc., April 2008

IV. Environmental Consequences

The potential environmental consequences associated with the Proposed Action and the No Action alternative are discussed in this chapter. The environmental categories evaluated, as specified in FAA Orders 1050.1E [I-1], 5050.4B [I-2], and BLM's *NEPA Handbook H-1790-1, Appendix 5* [I-3], are as follows:

- Noise
- Compatible land use
- Socioeconomic impacts, environmental justice, and children's environmental health and safety risks
- Air quality
- Areas of critical environmental concern¹
- Department of Transportation Section 4(f) lands
- Historic, architectural, archaeological, and cultural resources
- Native American religious concerns¹
- Wilderness¹
- Fish, wildlife, and plants
- Federally-listed threatened or endangered species
- Invasive, nonnative species¹
- Floodplains and floodways
- Water quality
- Hazardous materials, pollution prevention, and solid waste
- Light emissions
- Visual resources^{1,2}
- Natural resources and energy supply
- Secondary (induced) impacts
- Construction impacts
- Consistency with plans, goals, and policies
- Cumulative impacts

The following environmental resources are not present within the project area and, therefore, would not be affected by the Proposed Action or the No Action alternative: wetlands, coastal resources, wild and scenic rivers, farmlands, and wild horses and borros¹.

4.1 Noise

Potential noise effects associated with the Proposed Action and the No Action were estimated at and within the Overflight Area in accordance with FAA Orders 1050.1E and 5050.4B. The FAA's INM, Version 7.0³ was used to quantify helicopter noise exposure in close proximity to the Heliport site, at McCarran and along existing or potential flight corridors to determine the potential for adverse noise exposure impacts associated with the Proposed Action. Noise modeling assumptions included:

¹ "Critical Elements of the Human Environment", as listed in Appendix 5 of the BLM's *NEPA Handbook H-1790-1*. In accordance with BLM Instruction Memorandum No. NV-2005-028, determination of significance for these environmental categories will be provided in the agency decision document. All other environmental categories will include the determination of significance in this EA, as required under FAA guidance [I-1, I-2].

² Visual resources, as detailed in the BLM's Visual Resource Management (VRM) 8400 series manuals.

³ See Section 3.5 and Appendix D for a description of the INM.

- forecasts and distribution⁴ of helicopter activity
- the types of helicopters (the AS350 and the EC130) anticipated to be used at the Heliport
- the configuration of the Heliport and helicopter landing and takeoff locations at McCarran
- potential local flight patterns in the immediate vicinity of the Heliport and McCarran
- the locations of existing and potential helicopter flight corridors
- potential flight altitudes
- helicopter performance data provided by local helicopter operators

Details regarding the noise analysis techniques, methodology, and assumptions used in the helicopter noise analysis are provided in Appendix D. A description of existing helicopter noise exposure in the vicinity of McCarran is provided in Section 3.5.1 and a description of the existing noise exposure at the Heliport site is provided in Section 3.5.2.1.

Calculated noise exposure in the vicinity of the Heliport site and of McCarran is presented in the form of contour maps. For the helicopter noise analysis, two ranges of noise exposure were considered: DNL⁵ 60 to 65⁶ and DNL 65. FAA Orders 1050.1E and 5050.4B state that the threshold of significance for noise impacts for most areas is when an action, compared to the no action alternative, would cause noise-sensitive areas exposed to DNL 65 and higher under the proposed action to experience an increase in DNL of 1.5 or more [I-1, I-2]. The Orders also state that when such impacts would occur, increases in DNL of 3.0 or more in noise-sensitive areas exposed to noise exposure between DNL 60 and 65 under the Proposed Action, should also be disclosed, although such increases are not considered to constitute a significant impact. FAA Orders 1050.1E and 5050.4B further state that FAA must give special consideration to national parks, national wildlife refuges, and tribal traditional cultural properties. Supplemental noise analysis is provided in this Chapter to address such concerns.

4.1.1 Summary of Findings

No residences, households, or noise-sensitive land uses would be exposed to helicopter noise of DNL 65 or higher in 2011 or 2017 under the Proposed Action. Noise levels at various locations of interest in the Overflight Area are also predicted to be below DNL 65 under both the Proposed Action and the No Action alternative. In addition, at locations where existing ambient noise levels were evaluated, the predicted noise levels for 2011 and 2017 helicopter operations alone would be comparable to or lower than ambient noise levels from all sources as measured at the same locations in 2004. Implementation of the Proposed Action would not result in significant noise impacts compared to the No Action alternative; therefore, no mitigation measures would be required. Helicopter noise levels in established residential communities and portions of the Lake Mead National Recreation Area beneath the Tropicana and Charleston helicopter flight corridors associated

⁴ As described in the following sections and in Appendix D, it has been assumed that some Grand Canyon helicopter air tour activity would remain at McCarran International Airport and that some would occur at a different location under both the Proposed Action and the No Action alternative. However, it is noted that the proposed Heliport could accommodate all the Grand Canyon helicopter air tour activity that may remain at McCarran and other airport locations in the Las Vegas region.

⁵ DNL = day-night average sound level. See Section 3.5 and Appendix D for the definition and description of DNL.

⁶ The FAA does not require analysis of DNL 60 to 65 noise exposure when no significant noise impacts are expected within the area exposed to DNL 65 and higher under the Proposed Action when compared with the No Action alternative. However, Clark County agencies uses information regarding noise exposure between DNL 60 and DNL 65 for local planning purposes and therefore DNL 60 noise contours are depicted on exhibits in this EA.

with Grand Canyon helicopter tour overflights would be lower under the Proposed Action than the No Action alternative, because there would be fewer overflights. Section 4.6 summarizes the results of a supplementary noise analysis conducted for parks and cultural properties.

4.1.2 Environmental Consequences

The potential for significant noise impacts related to the Proposed Action was determined by considering the following:

- Cumulative helicopter noise exposure at and near the Heliport site and McCarran International Airport
- Cumulative helicopter noise exposure at noise-sensitive locations beneath or near existing helicopter flight corridors and potential helicopter flight corridors associated with the Heliport site

As discussed in Sections 2.5.1 and 2.5.2, some helicopter operations are anticipated to occur at a facility other than McCarran or the proposed Heliport site under the Proposed Action and No Action alternative. The specific effects of those helicopter operations (i.e., the helicopter operations not at McCarran or the proposed Heliport Site) on people, households, and noise sensitive land uses in the Overflight Area were not evaluated in this EA. Appendix D provides additional information regarding the distribution of helicopter operations in 2011 and 2017 under the Proposed Action and No Action alternative.

4.1.2.1 Proposed Action

Noise exposure contours were developed for the two locations expected to accommodate Grand Canyon helicopter air tour operations under the Proposed Action: the Heliport site and McCarran International Airport. Although Grand Canyon helicopter air tour operators have stated their support for the construction and operation of the heliport at the South of Sloan site, it has been assumed that some number of Grand Canyon helicopter air tour operations would continue at McCarran even after the Heliport is constructed and operational. Continued activity at McCarran is not part of the Proposed Action, but rather a planning assumption reflecting the fact that CCDOA has limited ability to prevent an operator from maintaining its base at McCarran.

The CCDOA consulted with the helicopter operators, the FAA, and other stakeholders to identify potential flight corridors associated with the Heliport site. Existing⁷ and potential flight corridors are shown on **Exhibit IV-1**. Three potential flight corridor scenarios are evaluated in this EA for the Heliport site. Each scenario consists of one primary corridor to and from the Heliport site and a sunset return corridor to the Heliport site. Under Scenario A, the Henderson flight corridor would be

⁷ The helicopter air tour operators based at McCarran International Airport and the FAA have executed Letters of Agreement establishing preferred helicopter flight corridors for Grand Canyon helicopter tour operations originating at McCarran. These Letters of Agreement are intended to ensure safety, minimize noise levels in residential areas, and comply with FAA ATC guidelines while the helicopter operators are in controlled airspace. The potential helicopter flight corridors analyzed in this EA could be a guide for future Letters of Agreement between the helicopter operators and the FAA, although the Letters of Agreement would not be applicable outside of controlled airspace.

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Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., September 2007.
Prepared by: Ricondo & Associates, Inc., April 2008.

0 4 miles

↑
north

Final EA for a Southern Nevada Regional Heliport
Environmental Consequences

Legend

-
- Proposed heliport site

Helicopter flight corridors

-  McCarran International Airport existing flight corridor to or from the Grand Canyon
-  Potential flight corridor to and/or from the Grand Canyon
-  Potential flight corridor from the Grand Canyon (during and after sunset)
-  Corridor boundary
-  Direction of traffic
-  Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area

- 
- Boulder City conservation easement

Other features

-  Primary road  Secondary/State road
 Railroad Jurisdictional boundary
 National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area

Flight Corridor Identification

Charleston	Existing arrival flight corridor along Charleston Boulevard
Tropicana	Existing departure flight corridor along Tropicana Avenue
Henderson	South of Sloan potential flight corridor #1
McCullough	South of Sloan potential flight corridor #2
Jean	South of Sloan potential flight corridor #3
Strip Railroad	South of Sloan potential flight corridor #4 (at sunset only)

Exhibit IV-1

Existing and Potential Helicopter Flight Corridors to and from the Grand Canyon

December 2008

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the primary flight corridor for helicopter operations to and from the Heliport site. Under Scenario B, the McCullough flight corridor would be the primary flight corridor. In accordance with Public Law 109-115 [I-6] the McCullough flight corridor represents the only route that can be used by Grand Canyon helicopter tour operators to cross the Sloan Canyon NCA if the flight is starting from or ending at the Heliport site. Under Scenario C, the Jean flight corridor would be the primary flight corridor. All three scenarios under the Proposed Action include a secondary flight corridor, Strip Railroad, for sunset and evening arrivals only. Flights on the Strip Railroad corridor would follow the existing Charleston corridor past the western side of McCarran, along the railroad tracks and I-15. Noise along the flight corridors is discussed in more detail in Section 4.1.2.3.

Noise exposure was analyzed for the anticipated first year of operations at the Heliport site (2011), and for conditions in a future year (2017). Noise exposure contours for the Proposed Action (Scenarios A, B, and C) for 2011 and 2017 superimposed onto maps of generalized existing land uses are presented on **Exhibits IV-2 and IV-3**, respectively. The noise exposure contours for each flight corridor scenario differ slightly because of differences in flight paths between the takeoff/landing areas at the Heliport site and the helicopter flight corridors. For example, helicopter traffic on the Henderson flight corridor to and from the Heliport site would follow a different path when departing or arriving to the site, and therefore result in a different noise exposure pattern near the Heliport site than traffic to and from the McCullough flight corridor. Differences in noise contours are minimized by the fact that most differences in potential flight paths would occur outside the 60 and 65 DNL contours.

No residences, or noise-sensitive land uses would be exposed to helicopter noise of DNL 65 and higher in either 2011 or 2017 under the Proposed Action under any of the three scenarios for potential flight corridors. As no existing noise-sensitive land uses would be exposed to DNL 65 and higher in 2011 or 2017, no significant changes in helicopter noise (i.e., an increase or decrease of 1.5 or more in noise-sensitive areas exposed to helicopter noise of DNL 65 or higher) would occur as a result of the Proposed Action. As discussed in Section 4.1.2.3, the Proposed Action would result in a reduction in the number of overflights of residences and portions of the Lake Mead National Recreation Area along the existing Grand Canyon helicopter air tour flight corridors. As a result, helicopter noise exposure would be less under the Proposed Action than under the No Action alternative along the existing Tropicana and Charleston flight corridors.

4.1.2.2 No Action Alternative

Noise exposure contours for 2011 and 2017 superimposed onto a map of generalized land uses for the No Action alternative are presented on **Exhibit IV-4**.

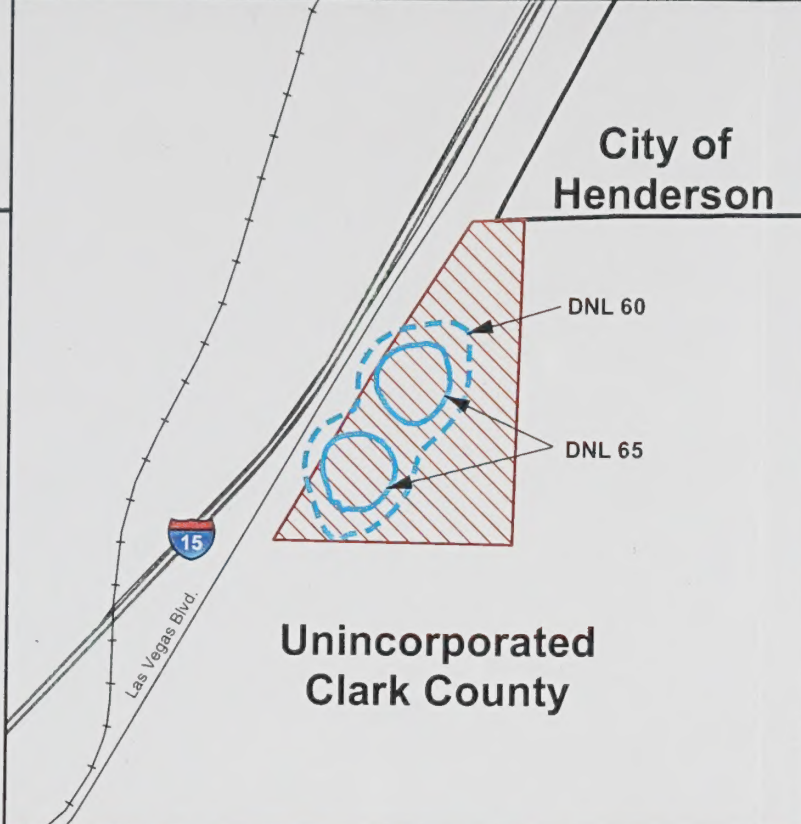
One flight corridor scenario was used for the analysis associated with the No Action alternative based on the continued use of the existing Charleston and Tropicana corridors to and from McCarran. No residences, households, or noise-sensitive land uses would be exposed to helicopter noise of DNL 65 or higher in either 2011 or 2017 under the No Action alternative. However, noise related to helicopter operations along existing helicopter flight corridors would not be reduced under the No Action alternative, and residents and portions of the Lake Mead National Recreation Area along those flight corridors would continue to experience helicopter overflights and their associated noise exposure. In addition, it is anticipated that some helicopter operations might move from McCarran to other facilities in Clark County under the No Action alternative and additional routes could be established from other facilities over residential areas.

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South of Sloan - Henderson Corridor Scenario



South of Sloan - McCullough Corridor Scenario



South of Sloan - Jean Corridor Scenario



Legend

- Potential/existing heliport site area
- 2011 DNL 65 helicopter noise exposure contour
- 2011 DNL 60 helicopter noise exposure contour (shown for informational purposes only)

DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.

Generalized existing land uses

- | | |
|---------------------------|---------------------|
| Residential single-family | Park / recreation* |
| Residential multi-family | Public |
| Mobile home | Vacant / open space |
| Commercial | Airport property |
| Industrial | |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

McCarran International Airport



Sources: Brown-Buntin Associates, Inc., September 2007 (noise exposure contours); Ricondo & Associates, Inc., September 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

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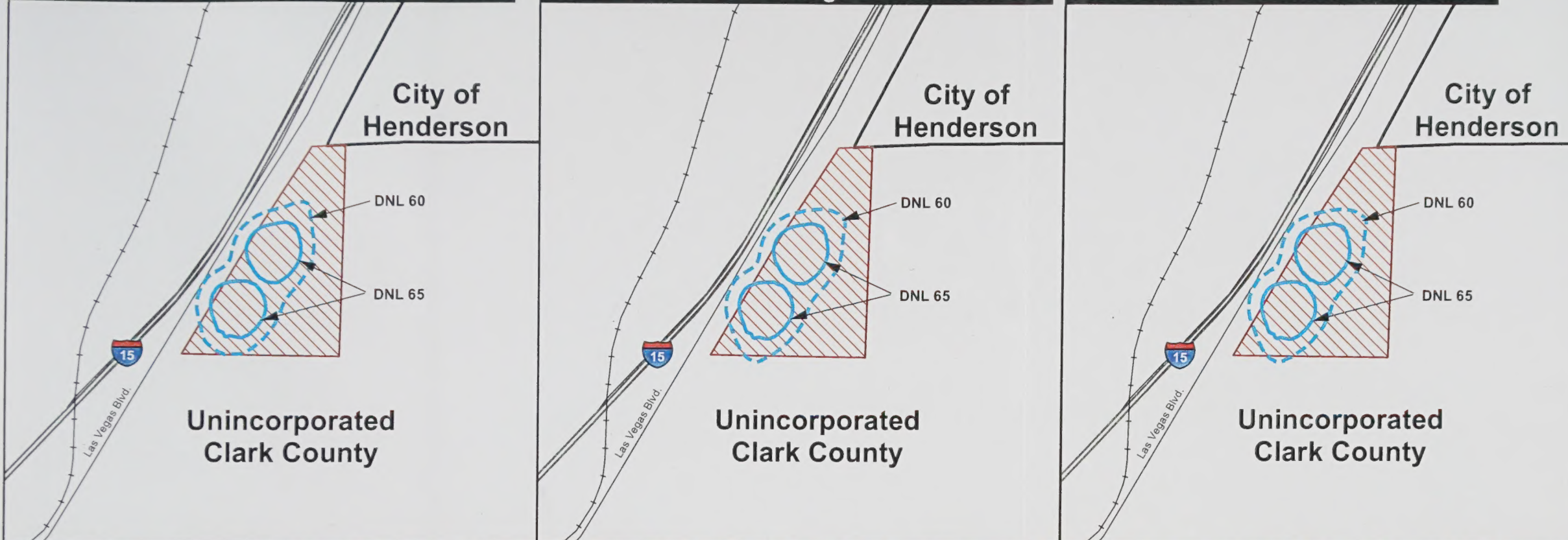
2011 Helicopter Noise Exposure Contours over Generalized Existing Land Uses Proposed Action

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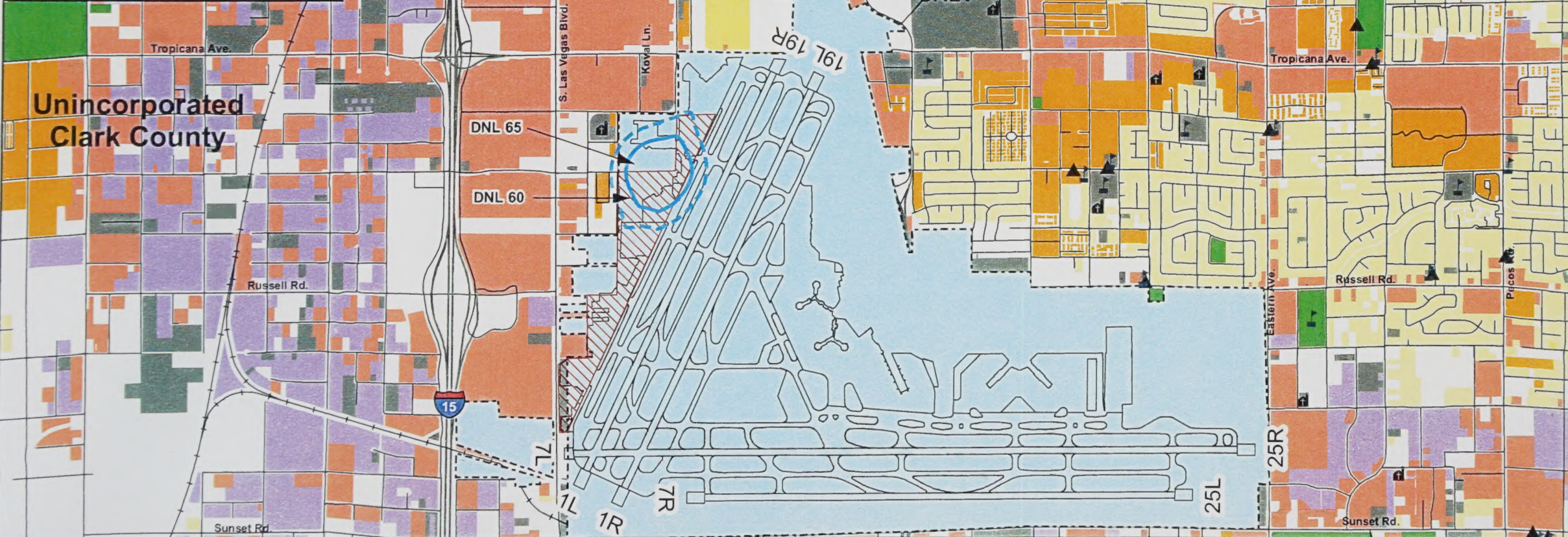
South of Sloan - Henderson Corridor Scenario

South of Sloan - McCullough Corridor Scenario

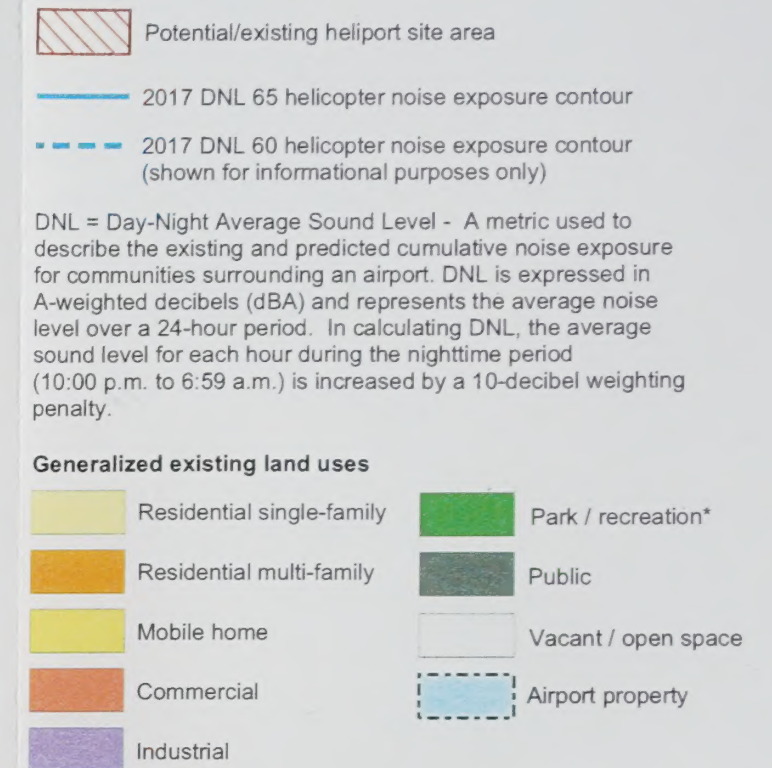
South of Sloan - Jean Corridor Scenario



McCarran International Airport



Legend

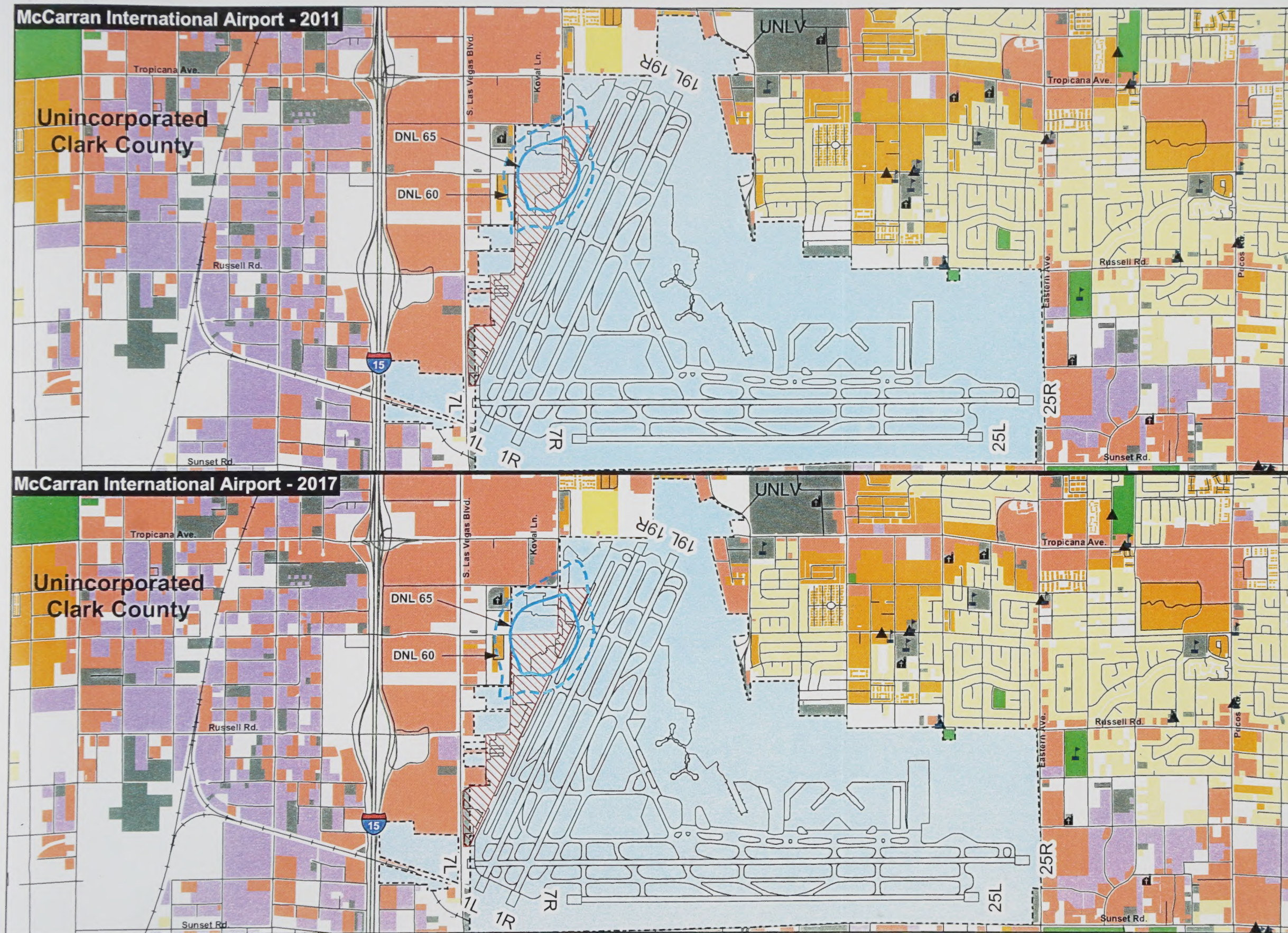


Sources: Brown-Buntin Associates, Inc., September 2007 (noise exposure contours); Ricondo & Associates, Inc., September 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.



2017 Helicopter Noise Exposure Contours over Generalized Existing Land Uses Proposed Action

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Legend

- Potential/existing heliport site area
- DNL 65 helicopter noise exposure contour
- DNL 60 helicopter noise exposure contour (shown for informational purposes only)

DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.

Generalized existing land uses

- | | |
|---------------------------|---------------------|
| Residential single-family | Park / recreation* |
| Residential multi-family | Public |
| Mobile home | Vacant / open space |
| Commercial | Airport property |
| Industrial | |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Sources: Brown-Buntin Associates, Inc., September 2007 (noise exposure contours); Ricondo & Associates, Inc., September 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

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2011 and 2017 Helicopter Noise Exposure Contours over Generalized Existing Land Uses No Action Alternative

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4.1.2.3 Overflight Area

Noise exposure within the Overflight Area associated with the potential helicopter flight corridors for the proposed Heliport is dependent on a number of factors including the altitude at which the helicopters are flown. For the purposes of the noise analysis, the lowest altitude analyzed for helicopter flight corridors was 300 feet AGL. This is the minimum altitude above the ground required by 14 CFR Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft* [IV-1], for helicopters carrying a passenger for fare. However, according to the air tour operators, the minimum expected vertical distance between the helicopters and the terrain along the routes during Grand Canyon helicopter air tours would be 500 feet, or higher in some areas, when feasible. This would be a voluntary action on the part of the air tour operators, unless otherwise required by the Act.⁸

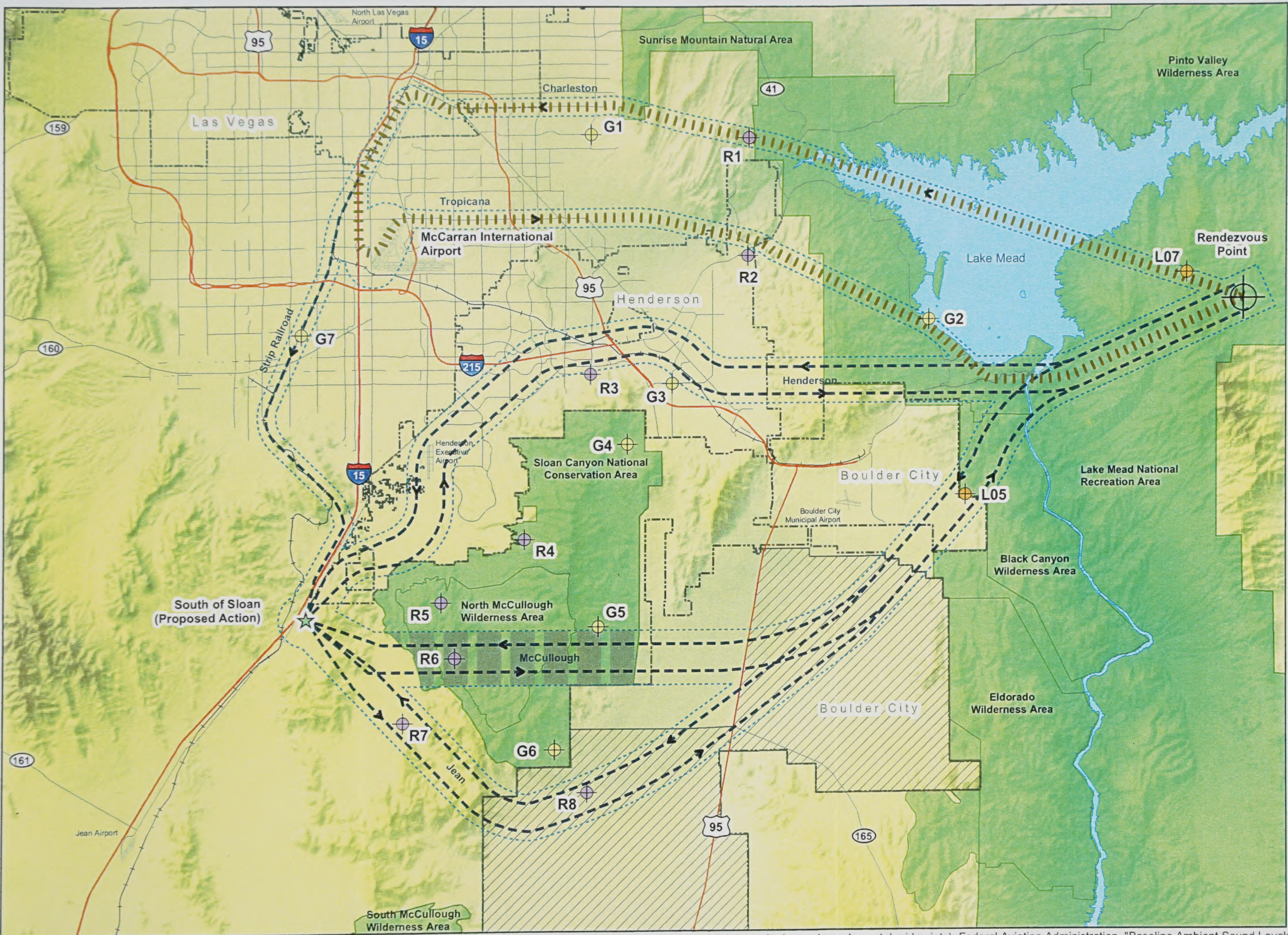
Helicopter noise exposure near existing and potential helicopter flight corridors was evaluated for the ten locations described in Section 3.5.2, including FAA locations L05 and L07 within the Lake Mead National Recreation Area⁹, plus seven supplemental sites. The seven supplemental sites (grid points) were identified to represent typical noise-sensitive locations in the Las Vegas region, such as residential areas, schools, recreation areas, and wildlife habitat. These locations are shown on **Exhibit IV-5**. **Table IV-1** indicates the land use or receptor represented by the grid points, and summarizes the ranges of predicted helicopter noise exposure for each grid point under the Proposed Action and the No Action alternative. Helicopter noise levels are reported in terms of cumulative (DNL) and single-event ($L_{\max}$) exposure. The $L_{\max}$ is considered a supplementary noise metric, and $L_{\max}$ values are reported for informational purposes.

Based on the INM grid point analysis, the highest helicopter DNLs would occur at grid points R1 (recreation area/trail) and G7 (residential area). The lowest helicopter DNLs (less than 25 dBA) would occur at grid points R4 (undeveloped land) and G4 (recreation area/trail). At all grid points, calculated helicopter DNLs are predicted to be below 65 and differences in calculated DNLs between the Proposed Action and the No Action alternative would be less than significant. In addition, at Sites R1 through R8, and FAA Sites L05 and L07, predicted DNLs from helicopter operations alone under the Proposed Action for 2011 and 2017 are anticipated to be comparable to or less than existing DNL values as measured during ambient noise level monitoring at the same locations in 2004. The highest maximum ($L_{\max}$) helicopter noise levels would also occur at grid points R1 and R7 and the lowest helicopter $L_{\max}$ noise levels would also occur at grid points R4 and G4.

⁸ 14 CFR Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft*, requires a minimum altitude of 300 feet AGL for helicopter operations when over congested areas; however, the Grand Canyon helicopter tour operators currently attempt to achieve a minimum altitude of 500 feet AGL.

⁹ Federal Aviation Administration, *Baseline Ambient Sound Levels in Lake Mead National Recreation Area* (DOT-VNTSC-FAA-06-13), April 2006.

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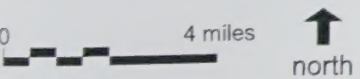
Legend

- Proposed heliport site
 - Ambient noise monitoring grid point
 - Supplemental grid point
 - FAA noise monitoring site
- Helicopter flight corridors**
- McCarran International Airport existing flight corridor to or from the Grand Canyon
 - Potential flight corridor to and/or from the Grand Canyon
 - Potential flight corridor from the Grand Canyon (during and after sunset)
 - Corridor boundary
 - Direction of traffic
 - Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area
 - Boulder City conservation easement
- Other features**
- Primary road
 - Secondary/State road
 - Railroad
 - Jurisdictional boundary
 - National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area

Flight Corridor Identification

Charleston	Existing arrival flight corridor along Charleston Boulevard
Tropicana	Existing departure flight corridor along Tropicana Avenue
Henderson	South of Sloan potential flight corridor #1
McCullough	South of Sloan potential flight corridor #2
Jean	South of Sloan potential flight corridor #3
Strip Railroad	South of Sloan potential flight corridor #4 (at sunset only)

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., September 2007; Brown-Buntin Associates, Inc. (ambient noise monitoring and supplemental grid points); Federal Aviation Administration, "Baseline Ambient Sound Levels in Lake Mead National Recreation Area," April 2006 (FAA noise monitoring sites).
Prepared by: Ricondo & Associates, Inc., August 2008.



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Table IV-1
Summary of Helicopter Noise Levels at Locations of Interest

Grid Point ^{1/}	Representative Land Use	Nearest Helicopter Flight Corridor(s) ^{2/}	Distance to Nearest Flight Corridor(s) (feet)	Measured Ambient Noise Level (DNL) ^{3/}	Predicted Helicopter Noise Levels (DNL) No Action Alternative ^{7/}		Predicted Helicopter Noise Levels (DNL) Proposed Action ^{7/}		Predicted Single Event Helicopter Noise Levels (L _{max}) ^{4/}	
					2011	2017	2011	2017	EC130	SA350D
R1	Recreation area (trail)	Charleston	0	50.6	44-53	45-55	39-49	40-50	61-78	65-80
R2	Abandoned mine	Tropicana	3,310	59.7	34-37	34-38	29-32	30-33	47-53	51-59
R3	Undeveloped land	Henderson (Inbound/Outbound)	7,600/2,340	55.1	n.a.	n.a.	39-43	40-43	53-58	55-62
R4	Undeveloped land	Henderson (Inbound/Outbound)	21,580/16,330	56.2	n.a.	n.a.	<25	<25	<35	<35
R5	Sloan Canyon petroglyphs	McCullough (Inbound/Outbound)	8,110/13,520	50.2	n.a.	n.a.	26-28	26-29	31-37	36-43
R6	Wilderness area with hiking trails	McCullough (Inbound/Outbound)	2,580/2,580	49.4	n.a.	n.a.	40-43	40-44	51-56	54-60
R7	Wilderness area with hiking trails	Jean (Inbound/Outbound)	3,170/2,090	46.8	n.a.	n.a.	42-44	42-44	55-59	57-63
R8	Electric power substation	Jean (Inbound/Outbound)	1,810/3,410	45.1	n.a.	n.a.	42-43	43-45	46-52	51-57
G1	Residential/school area	Charleston	5,300	n.a.	27-33	28-34	22-28	22-28	39-45	44-51
G2	Recreation area (campsite)	Tropicana	1,430	n.a.	43-47	44-48	38-43	39-43	59-66	62-69
G3	Residential area	Henderson (Inbound/Outbound)	8,080/2,880	n.a.	n.a.	n.a.	36-40	36-40	49-55	52-59
G4	Recreation area (trail)	Henderson (Inbound/Outbound)	22,420/17,110	n.a.	n.a.	n.a.	<25	<25	<35	<35
G5	Wilderness/habitat area	McCullough (Inbound/Outbound)	3,320/8,730	n.a.	n.a.	n.a.	33-37	33-37	47-53	51-57
G6	Wilderness/habitat area	Jean (Inbound/Outbound)	8,200/13,580	n.a.	n.a.	n.a.	26-28	26-29	31-37	36-43
G7	Residential area	Strip Railroad	0	n.a.	n.a.	n.a.	37-47	38-48	61-78	65-80
L05 ^{5/}	Semi-primitive/natural	McCullough/Jean (Outbound)	2,440	41.8 ^{6/}	n.a.	n.a.	36-41	36-42	53-58	55-62
L07 ^{5/}	High use	Charleston	1,100	55.1 ^{6/}	43-48	44-49	38-44	39-45	60-70	63-73

- Notes:
n.a. = Not applicable
DNL = Day-night average sound level, expressed in A-weighted decibels
1/ Grid point locations are shown on Exhibit IV-5. Noise measurements were conducted at Sites R1 through R8 and Sites L05 and L07 in 2004.
2/ Existing and potential helicopter flight corridors are shown on Exhibit IV-5.
3/ Ambient noise level data are from Table III-2. Sites G1-G7 are supplemental grid point locations where noise levels were calculated using the INM. Ambient noise measurements were not conducted at those locations.
4/ Predicted L_{max} values are shown as a range for individual overflights by the SA350D and EC130 helicopter types at altitudes ranging from 300 feet to 1500 feet above the observer location (grid point).
5/ FAA ambient noise monitoring site and data as described in *Baseline Ambient Sound Levels in Lake Mead National Recreation Area* (DOT-VNTSC-FAA-06-13), April 2006.
6/ DNL values estimated from hourly L_{eq} data measured by the FAA as referenced above.
7/ Predicted DNL values are for potential helicopter flight altitudes ranging from 300 feet to 1500 feet above the observer location (grid point).

Source: Brown-Buntin Associates, Inc.
Prepared by: Ricondo & Associates, Inc., December 2008

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4.2 Compatible Land Use

According to Appendix A of 14 CFR Part 150 [III-4] and FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports* [IV-2], a proposed action is considered to have a significant impact on land use compatibility if it causes significant increases in noise exposure over residential or other noise-sensitive land uses, such as schools, parks, and historic buildings, within areas exposed to aircraft noise of DNL 65 and higher. In addition to the consideration of aircraft noise impacts, other types of land use impacts to be considered in environmental assessments include disruption of communities, relocation of businesses, and induced socioeconomic impacts.

Potential disruptions to communities, effects on businesses, and induced socioeconomic impacts associated with the implementation of the Proposed Action are discussed in Section 4.3. Potential impacts to floodplains and floodways are discussed in Section 4.13. Potential impacts to fish, wildlife, and plants are discussed in Section 4.10; federally listed threatened and endangered species, including potential impacts to critical habitat are discussed in Section 4.11. As discussed in FAA Order 1050.1E, the compatible land use section of EAs for airport actions must include documentation to support the required airport sponsor's assurance under 49 USC 47107(a)(10) that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to promote airport/community land use compatibility.¹⁰ The Clark County Board of County Commissioners has included a land use compatibility assurance letter in this EA, as provided in **Appendix E**.

4.2.1 Summary of Findings

Under both the Proposed Action and the No Action alternative, residents beneath and near existing helicopter flight corridors would continue to experience helicopter overflights and noise. The number of Grand Canyon helicopter tour overflights of established residential communities along the Tropicana and Charleston helicopter flight corridors would be lower under the Proposed Action when compared to the No Action alternative and helicopter noise levels would also be lower in those communities. Implementation of the Proposed Action would affect helicopter flight patterns in the Overflight Area; however, helicopter noise exposure is anticipated to be less than the FAA's land use compatibility threshold of DNL 65 and is not expected to adversely affect community land use compatibility within the Area of Disturbance or the Overflight Area.

4.2.2 Environmental Consequences

4.2.2.1 Proposed Action

The Heliport site is located on BLM managed public land in unincorporated Clark County within the South County Planning Area. The Clark County Department of Comprehensive Planning adopted a land use plan for the South County Planning Area in 1994 [III-5] and updated the land use plan map in 2005. The Heliport site is within the County land use designation Open Land.¹¹ While the Open Land designation allows for some limited uses (e.g., grazing), it is anticipated that future development outside the BLM disposal area (generally around the Heliport site) would be limited as land is not available for disposal.

¹⁰ The land use compatibility category is an evaluation of effects on the manmade environment based on a review of 14 CFR Part 150 land use categories; see other sections of this EA for discussions of noise relative to wildlife and DOT Section 4(f) lands.

¹¹ The land use category is called open space on Exhibits IV-6 and IV-7. See Appendix E for detailed description of land use designations under the South County Planning Area.

In 2007 the City of Henderson annexed about 3,455 acres of land located within the BLM disposal area north/northeast of the Heliport site. The City of Henderson has not prepared a land use plan for the annexed land, which is located in the West Henderson Planning Area. The land use plan for the South County Planning Area, prepared by the Clark County Department of Comprehensive Planning, would continue to apply until the City of Henderson updates the land use designation applicable to this area.

Two ranges of noise exposure were considered: DNL 60 to 65 and DNL 65 and higher. The noise contours were superimposed onto maps of generalized planned land uses to determine if projected noise levels would be incompatible with land use designations included in adopted land use plans encompassing the Area of Disturbance and McCarran.

Helicopter noise exposure contours for the Proposed Action in 2011 and 2017 are presented over generalized planned land uses on **Exhibits IV-6** and **IV-7**, respectively. As shown on the exhibits, helicopter noise of DNL 65 and higher would not extend beyond the property boundaries of the Heliport site or McCarran International Airport in 2011 or 2017. No planned noise-sensitive land uses would be exposed to helicopter noise of DNL 65 and higher in either 2011 or 2017 as a result of the Proposed Action.

4.2.2.2 No Action Alternative

Noise exposure contours for the No Action alternative in 2011 and 2017 are presented over generalized planned land uses on **Exhibit IV-8**. As shown, the areas that would be exposed to DNL 65 and higher from helicopter operations would be contained within the McCarran boundaries. No existing or planned noise-sensitive land uses in the vicinity of McCarran would be exposed to helicopter noise of DNL 65 and higher in either 2011 or 2017.

4.2.2.3 Overflight Area

Between the Heliport site and the Rendezvous Point¹², planned land uses beneath the Henderson flight corridor generally represent a continuation of existing land use patterns, with single- and multi-family residential, commercial, industrial, recreation, public, and open space uses. The planned land uses also include new areas of industrial, mixed use, and low-density residential uses occupying a portion of what is currently vacant land. (See Exhibit III-12.) Most areas depicted as vacant lands on the existing land use exhibits are planned as open space. However, these lands are outside the BLM disposal area and are unavailable for community development. Flights on the McCullough flight corridor would pass primarily over land designated as open space or vacant land. Flights on the Jean flight corridor would pass over open space, vacant land, and a small area of planned industrial land use, which is currently vacant, and a small area of public land use. Almost all Open Land is federal land, except for areas within Boulder City, where the flight corridors pass over the Boulder City conservation easement¹³ and a recreation area. Flights on the Strip Railroad corridor would pass over single- and multi-family residential, commercial,

¹² As described in Section 3.2.1, the existing and potential helicopter flight corridors are the same between the Rendezvous Point and the Grand Canyon and no changes would occur as a result of the Proposed Action beyond the Rendezvous Point. See Exhibit III-8.

¹³ Clark County purchased a conservation easement on about 85,000 acres of desert tortoise habitat in the Eldorado Valley.

Legend:

- Potential/existing heliport site area
- 2011 DNL 65 helicopter noise exposure contour
- 2011 DNL 60 helicopter noise exposure contour (shown for informational purposes only)

DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.

Generalized planned land uses

- Residential single-family
- Residential multi-family
- Commercial
- Mixed use
- Industrial
- Major development project
- Open space
- Park / recreation*
- Public
- Vacant / tax exempt
- Airport property

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

-  School
-  Religious facility
-  Hospital
-  Structure listed in National Register of Historic Places
-  Day care

Other features

-  Jurisdictional boundary
-  Street
-  Interstate highway
-  U.S. route
-  Railroad

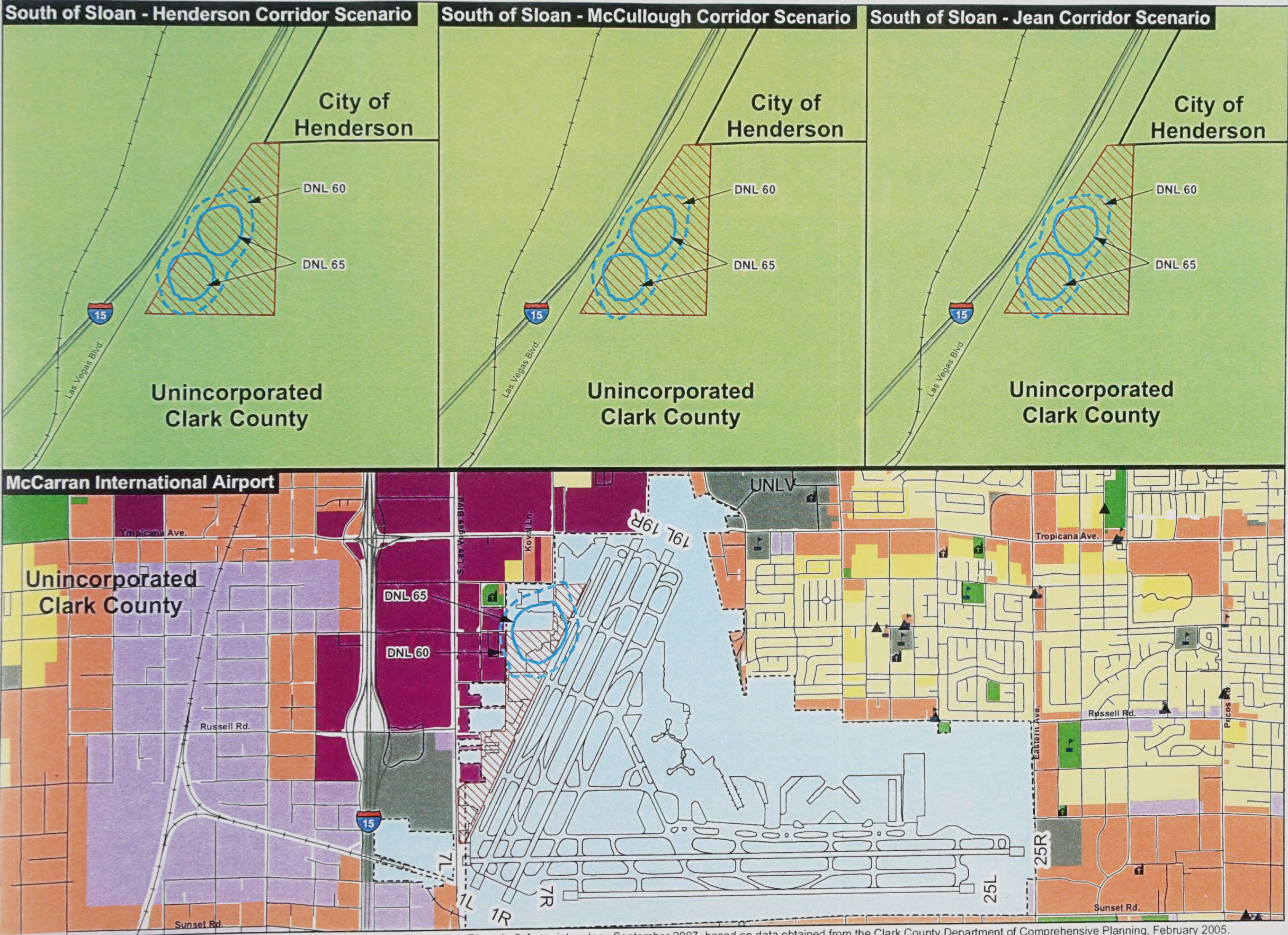
Sources: Brown-Buntin Associates, Inc., September 2007 (noise exposure contours); Ricondo & Associates, Inc., September 2007, based on data obtained from the Clark County Department of Comprehensive Planning, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit IV-6

2011 Helicopter Noise Exposure Contours over Generalized Planned Land Uses Proposed Action

December 2008

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Legend

- Potential/existing heliport site area
 - 2017 DNL 65 helicopter noise exposure contour
 - 2017 DNL 60 helicopter noise exposure contour (shown for informational purposes only)
- DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.
- Generalized planned land uses**
- | | |
|---------------------------|---------------------|
| Residential single-family | Open space |
| Residential multi-family | Park / recreation* |
| Commercial | Public |
| Mixed use | Vacant / tax exempt |
| Industrial | Airport property |
| Major development project | |
- * Recreation includes commercial and non-profit recreational facilities
- Noise sensitive facilities**
- School
 - Religious facility
 - Hospital
 - Structure listed in National Register of Historic Places
 - Day care
- Other features**
- Jurisdictional boundary
 - Street
 - Interstate highway
 - U.S. route
 - Railroad

Sources: Brown-Buntin Associates, Inc., September 2007 (noise exposure contours); Ricondo & Associates, Inc., September 2007, based on data obtained from the Clark County Department of Comprehensive Planning, February 2005.
 Prepared by: Ricondo & Associates, Inc., April 2008.

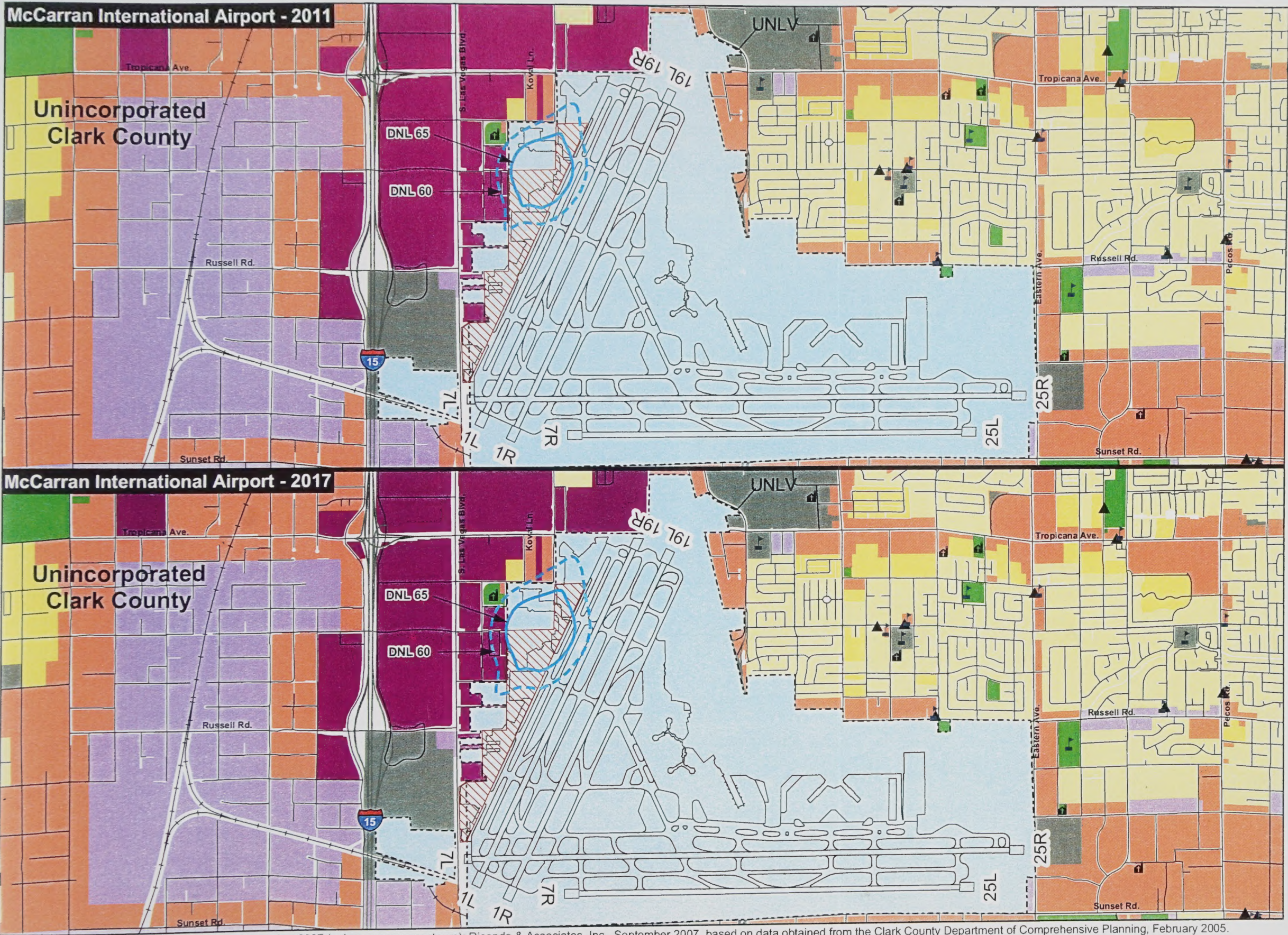


2017 Helicopter Noise Exposure Contours over Generalized Planned Land Uses
Proposed Action

Exhibit IV-7

December 2008

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Sources: Brown-Buntin Associates, Inc., September 2007 (noise exposure contours); Ricondo & Associates, Inc., September 2007, based on data obtained from the Clark County Department of Comprehensive Planning, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

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mixed use, industrial, park/recreational and public land uses, open space, and vacant land. In addition, flights on the Strip Railroad corridor would continue west of McCarran, follow the railroad tracks and I-15, and pass over single- and multi-family residential, commercial, and industrial land uses, open space, park/recreational areas, vacant land, and an area of public land use.

Implementation of the Proposed Action would affect helicopter flight patterns in the Overflight Area and potentially result in helicopters overflying areas that are currently developed with noise-sensitive land uses or that may be developed with noise-sensitive land uses in the future. Nevertheless, as discussed in Section 4.1, helicopter noise exposure beneath and near the Overflight Area is anticipated to be less than the FAA's land use compatibility threshold of DNL 65. As a result, helicopter noise on the ground beneath the Overflight Area is not expected to adversely affect community land use compatibility.

Between McCarran and the Rendezvous Point, planned land uses beneath the Tropicana flight corridor generally represent a continuation of existing land use patterns and include single- and multi-family residential, commercial, industrial, mixed use, public, and open space land uses. Planned land uses beneath the Charleston flight corridor generally represent a continuation of existing land use patterns and include single- and multi-family residential, commercial, mixed use, industrial, park/recreational, public land uses, open space, and vacant land. Under both the Proposed Action and the No Action alternative, the Tropicana and Charleston flight corridors would continue to be utilized; however, the number of overflights of established residential communities along both corridors would be lower under the Proposed Action.

4.3 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

In accordance with FAA Orders 1050.1E and 5050.4B, the three primary social impact categories to be considered in an EA are: (1) socioeconomic impacts, (2) environmental justice, and (3) children's environmental health and safety risks.

Factors to be considered when determining whether a proposed project would result in significant socioeconomic impacts include: (1) if extensive relocation of residents would be required, but insufficient replacement housing is available, and this results in a high degree of controversy; (2) if Section 206(a) of the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*, as amended, [IV-3] is used as provision for housing of last resort; (3) if relocation of businesses, including farms, creates severe economic hardship on the community; (4) if significant disruption of employment and communities occurs; and (5) if a noticeable increase in traffic congestion or access time to community facilities cannot be prevented or minimized.

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* [IV-4] provides guidance to federal agencies for identifying and addressing disproportionately high environmental effects of federal programs and activities on minority and low-income populations. Projects are considered to have a significant environmental justice impact when disproportionately high segments of low-income and minority populations are affected, or when the impacts are appreciably more severe or of greater magnitude than adverse effects experienced by non-minority and/or non-low-income populations.

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* [IV-5], directs federal agencies to ensure that potential environmental health risks and safety risks

that may disproportionately affect children are identified and assessed in all federal policies, programs, and actions. Potential impacts to children's environmental health and safety risks are considered significant if a proposed action disproportionately impacts children's health and safety, considering all impact categories set forth in FAA Orders 1050.1E and 5050.4B.

4.3.1 Summary of Findings

No residential or commercial development is located within one mile of the Heliport site; the nearest developments are 3.5 miles north of the site. Construction of the Proposed Action would not require relocation of residents or businesses. The Proposed Action would not result in any adverse impacts associated with socioeconomic factors, environmental justice, or children's environmental health and safety risks compared with the No Action alternative. In addition, under the Proposed Action, socioeconomic factors, environmental justice, or children's environmental health and safety risks could be reduced with the relocation of flights over non-developed areas.

4.3.2 Environmental Consequences

4.3.2.1 Socioeconomic Impacts

Proposed Action

The Heliport site is surrounded by vacant land to the north (City of Henderson) and BLM-administered land to the east, west, and south of the site. There is no residential development within one mile of the Heliport site. No acquisition and/or relocation of residents or businesses would be required to allow the implementation of the Proposed Action. No adverse disruptions to communities or local employment would occur.

Implementation of the Proposed Action would increase the number of motor vehicle movements on roadways in the vicinity of the Heliport site and vehicle miles traveled in the region compared to the No Action alternative, however the effect on local and regional traffic patterns would be negligible. According to the Regional Transportation Commission of Southern Nevada's *Regional Transportation Plan 2004 – 2025* [IV-6], all of the major arterial streets and freeways in the urbanized areas of the Las Vegas Valley are expected to become congested during the planning period (through 2017) and intersections near the Las Vegas Strip and McCarran that would be used by limousines and buses transporting Grand Canyon helicopter air tour passengers under either the Proposed Action or the No Action alternative will be operating at a poor level of service (E or F). Intersections in the vicinity of the Heliport site, are anticipated to operate at an adequate level of service (A, B, or C) through 2017. In 2011, it is estimated that 0.003 percent [IV-7] of the vehicle miles traveled in the region would be attributable to vehicle trips between the Heliport site and the Las Vegas Strip under the Proposed Action. Consequently, the Proposed Action is anticipated to have a less than significant impact on traffic patterns and traffic congestion in the region compared with the No Action alternative.

Construction-related traffic would occur along I-15, a major freeway connecting the Las Vegas region to other parts of Southern California. The incremental addition of construction related vehicles on I-15 is not anticipated to adversely impact traffic flow to and from the Las Vegas region. Further, construction related traffic would be scheduled during off-peak travel periods to the extent possible. No adverse impacts related to construction surface traffic are anticipated under the Proposed Action.

No Action Alternative

Acquisition or displacement of existing residences and businesses would not be required under the No Action alternative. No disruptions to local or regional traffic patterns are anticipated under the No Action alternative; however, limousines and buses carrying Grand Canyon helicopter air tour passengers would continue to use congested roadways between McCarran and the Las Vegas Strip.

4.3.2.2 Environmental Justice

Table IV-2 shows the ethnicity of residents in Clark County as a whole and in the vicinity of the Heliport site and McCarran¹⁴. According to the U.S. Decennial Census [III-6], about 72 percent of Clark County residents are white, with the remaining 28 percent being of a minority ethnicity.

Table IV-3 shows household incomes for Clark County as a whole and for households in the vicinity of the Heliport site and McCarran. According to the 2000 Census, the average size of a family in Clark County is 3.19 people. According to the U.S. Department of Health and Human Services, a family of three with an annual income of \$14,150 is considered to be living at the poverty level. About 12 percent of Clark County households have an annual income less than \$14,999, which is just above the poverty level.

Table IV-2

Ethnicity of Residents in the Las Vegas Region

Race ^{1/}	Total Clark County	Heliport Site Area	McCarran International Airport Area
White	71.6 %	92.1 %	63.8 %
Minority ^{2/} :			
Black or African American	9.1 %	1.4 %	8.6 %
American Indian and Alaska Native	0.8	0.5	0.8
Asian	5.3	2.0	8.0
Native Hawaiian and Other Pacific Islander	0.5	0.2	0.7
Some other race	8.6	1.9	12.5
Two or more races	4.2	2.0	5.7
Minority Subtotal	28.4 %	7.9 %	36.2 %
Total	100.0 %	100.0 %	100.0 %

Notes:

Columns may not add to totals shown because of rounding.

1/ Race is the subject category for ethnicity, as reported by the U.S. Census Bureau.

2/ The U.S. Census Bureau reports "Hispanic or Latino" population separately because they do not represent "race" categories. The U.S. Census reports for the year 2006, Hispanic or Latino peoples make up about 27% of the total population of Clark County [III-8].

Source: U.S. Department of Commerce, Bureau of the Census, actual data from 2000 Decennial Census

Prepared by: Ricondo & Associates, Inc., December 2008

¹⁴ As discussed previously, no people live within one mile of the Heliport site. For the environmental justice and children's environmental health and safety risk analyses, the Heliport site area was defined as Census Tracts 57.10 and 58.16. The McCarran site area was defined as Census Tracts 27.02, 29.62, 26.01, 26.02, 26.03, and 29.56.

Table IV-3

Annual Household Income in the Las Vegas Region

Income	Total Clark County	Heliport site Area	McCarran International Airport Area
Less than \$10,000	7.1 %	6.5 %	12.2 %
\$10,000 to \$14,999	5.1	3.4	7.7
\$15,000 to \$24,999	12.4	5.4	22.0
\$25,000 to \$34,999	13.1	8.7	16.2
\$35,000 to \$49,999	18.1	15.5	19.7
\$50,000 to \$74,999	21.5	20.7	13.5
\$75,000 to \$99,999	11.1	13.8	5.4
\$100,000 to \$149,999	7.5	13.4	2.6
\$150,000 to \$199,999	1.9	7.0	0.4
\$200,000 or more	2.1	5.4	0.3
Total	100.0%	100.0 %	100.0 %

Note: Columns may not add to totals shown because of rounding.

Source: U.S. Department of Commerce, Bureau of the Census, 2000 Census

Prepared by: Ricondo & Associates, Inc., April 2008

Proposed Action

The population of the Heliport site area is about 92 percent white; the remaining eight percent are of a minority ethnicity [III-6]. The percentage of people within the Heliport site area classified in the 2000 U.S. Census as minorities is lower than the percentage of minorities within the McCarran site area and in Clark County as a whole. Approximately 11 percent of the households in the vicinity of the Heliport site have incomes less than \$14,999 per year, which is lower than in the vicinity of McCarran and in Clark County as a whole. The percentage of individuals classified as minorities and households classified as low-income within the Heliport site area is not disproportionately higher than the percentage of minorities and low-income households in Clark County as a whole. As no significant impacts are anticipated within the Area of Disturbance under the Proposed Action, the Proposed Action would not have a disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

No Action Alternative

The population in the vicinity of McCarran is about 64 percent white; the remaining 36 percent are of a minority ethnicity. The percentage of people classified in the 2000 U.S. Census as minorities in the vicinity of McCarran is higher than in Clark County as a whole as well as in the vicinity of the proposed Heliport site. About 20 percent of the households in the vicinity of McCarran have an annual income less than \$14,999. This is a higher percentage than in Clark County as a whole. Under the No Action alternative, these populations would continue to be affected by an increasing number of Grand Canyon helicopter overflights along the existing corridors.

Overflight Area

As shown on **Exhibit IV-9**, the percentage of persons listed as minorities by the U.S. Census and residing beneath or near the Overflight Area associated with the potential helicopter flight corridors for the proposed Heliport is lower than the percentage of minorities residing beneath or near the existing flight corridors. Based on a review of U.S. Census data and land use data, it is also noted that population densities are lower beneath the potential flight corridors and large areas beneath the Jean and McCullough flight corridors are undeveloped.

As shown on **Exhibit IV-10**, the percentage of low-income households beneath or near the potential helicopter flight corridors is not disproportionately higher than the percentage of low-income households in the County as a whole or along the existing helicopter flight corridors.

Calculated helicopter noise levels are predicted to be below DNL 65 beneath or near the Overflight Area associated with the potential helicopter flight corridors for the proposed Heliport. As no adverse impacts from other environmental resource categories (e.g., air quality, noise, and water quality) are anticipated, no adverse impacts on minorities or low-income households are anticipated within the Overflight Area under the Proposed Action. Under the both the Proposed Action and No Action alternative, minority and low-income residents beneath and near the existing flight corridors would continue to experience helicopter overflights; however, helicopter noise levels in established residential communities beneath the Tropicana and Charleston helicopter flight corridors associated with Grand Canyon helicopter tour overflights would be lower under the Proposed Action than the No Action alternative since there would be fewer overflights.

4.3.2.3 Children's Environmental Health and Safety Risks

Table IV-4 shows the age distribution of Clark County residents in comparison to the age distribution for the areas surrounding the Heliport site and McCarran. About 24 percent of Clark County residents are 17 years old and younger (i.e., children).

Table IV-4

Age of Residents in the Las Vegas Region

Age Group (years)	Total Clark County	Heliport site Area	McCarran International Airport Area
Children			
Under 5	6.0 %	5.2 %	6.3 %
5 to 17	18.1	14.1	12.5
Children Subtotal	24.1 %	19.3 %	18.8 %
Adult ^{1/}	75.9	80.7	81.2
Total ^{2/}	100.0 %	100.0 %	100.0 %

Notes:

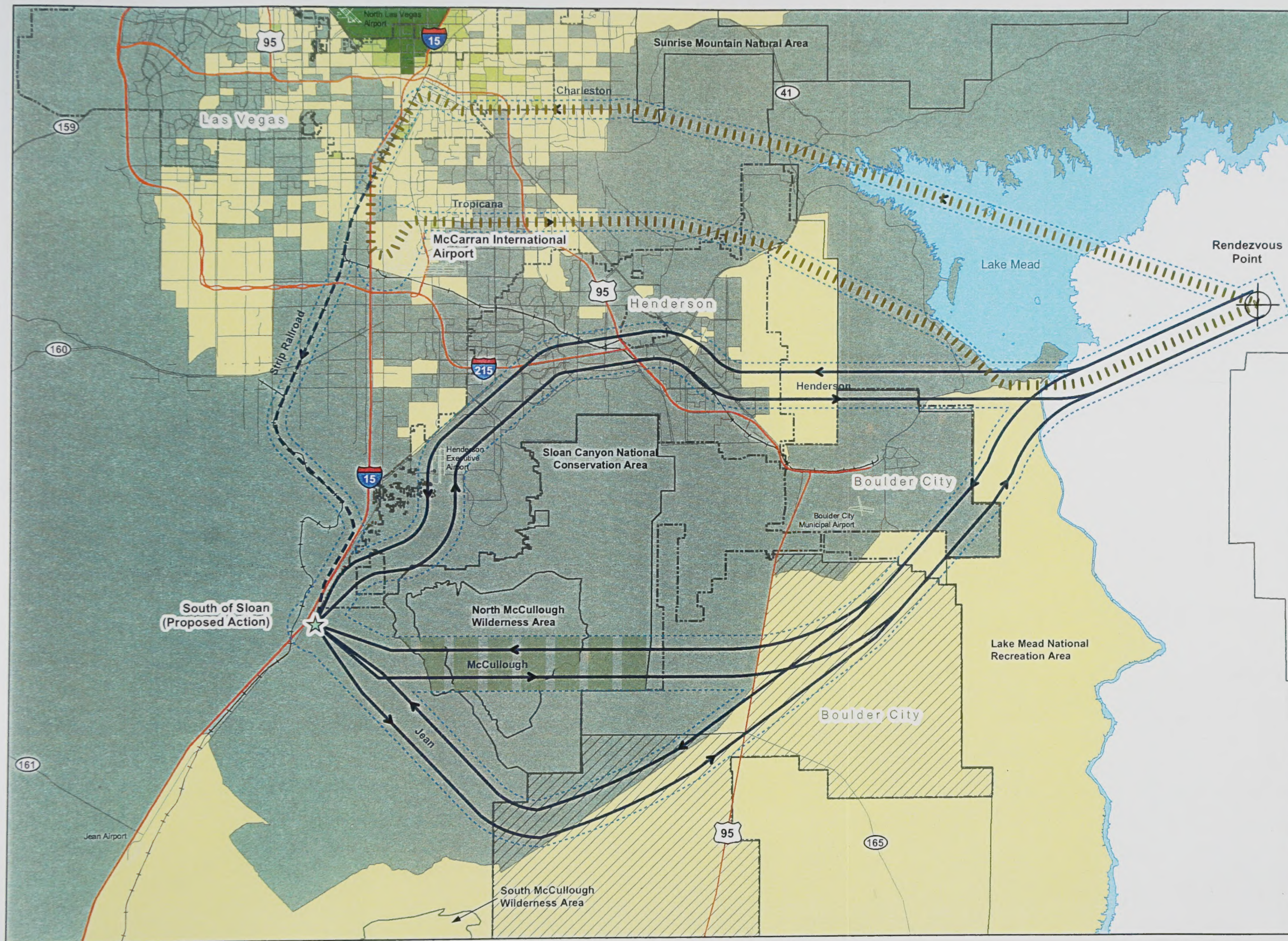
1/ Adult category includes persons 18 years old and over.

2/ Columns may not add to totals shown because of rounding.

Source: U.S. Department of Commerce, Bureau of the Census, 2000 Census

Prepared by: Ricondo & Associates, Inc., April 2008

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Legend

- ★ Proposed heliport site
 - 0 - 25% non-white
 - 25.1 - 50% non-white
 - 50.1 - 75% non-white
 - 75.2 - 95% non-white
- Helicopter flight corridors**
- McCarran International Airport existing flight corridor to or from the Grand Canyon
 - Potential flight corridor to and/or from the Grand Canyon
 - - - Potential flight corridor from the Grand Canyon (during and after sunset)
 - - - Corridor boundary
 - > Direction of traffic
 - Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area
 - ▨ Boulder City conservation easement
- Other features**
- Primary road
 - Secondary/State road
 - Railroad
 - - - Jurisdictional boundary

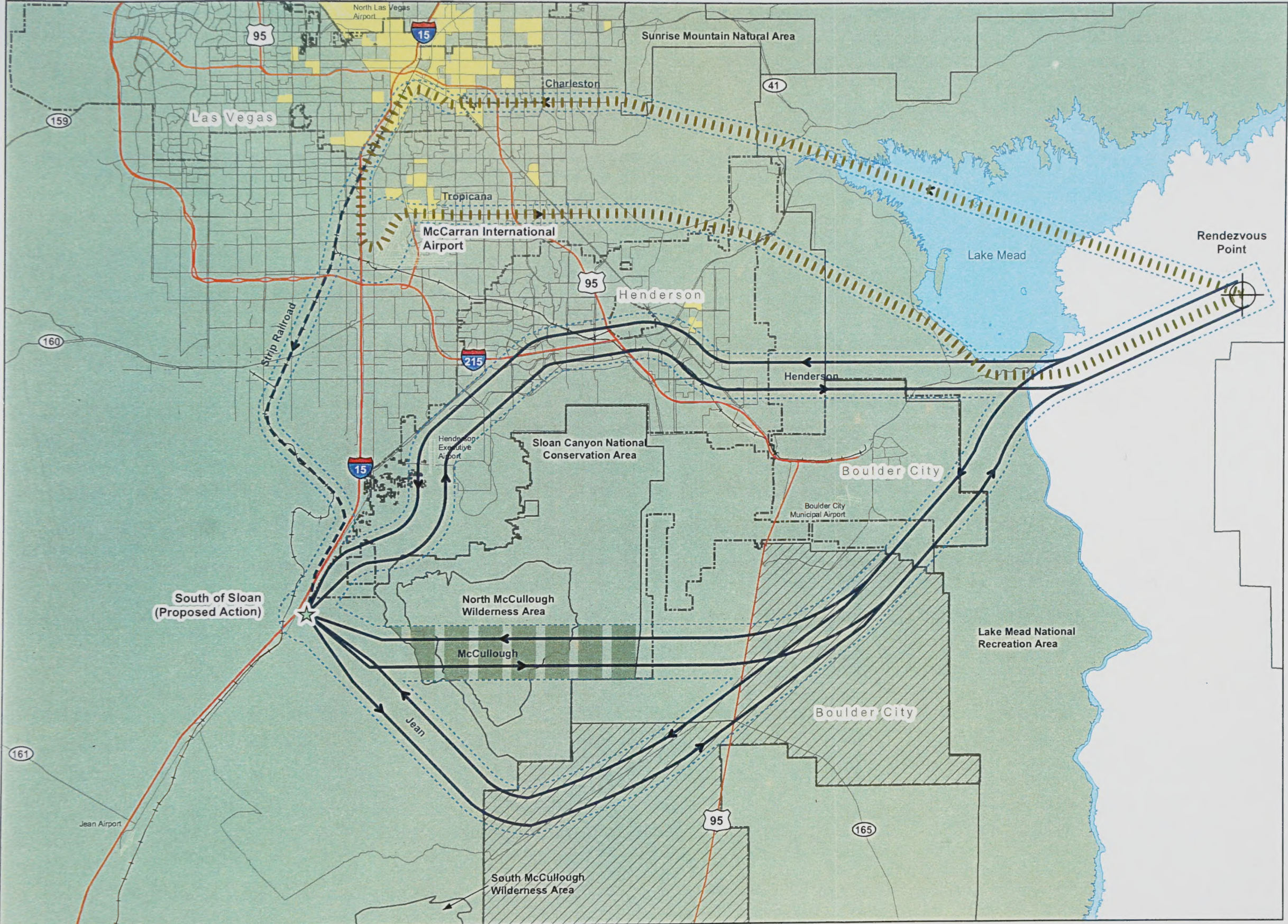
Flight Corridor Identification

Charleston	Existing arrival flight corridor along Charleston Boulevard
Tropicana	Existing departure flight corridor along Tropicana Avenue
Henderson	South of Sloan potential flight corridor #1
McCullough	South of Sloan potential flight corridor #2
Jean	South of Sloan potential flight corridor #3
Strip Railroad	South of Sloan potential flight corridor #4 (at sunset only)

Sources: Clark County Department of Aviation; Census TIGER/Line 2000 Data.
Prepared by: Ricondo & Associates, Inc., April 2008.

0 4 miles
↑ north

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Legend

- ★ Proposed heliport site
- 0 - 20% households in poverty
- 20.1 - 53% households in poverty
- Helicopter flight corridors**
 - McCarran International Airport existing flight corridor to or from the Grand Canyon
 - Potential flight corridor to and/or from the Grand Canyon
 - Potential flight corridor from the Grand Canyon (during and after sunset)
 - Corridor boundary
 - Direction of traffic
- Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area
- Boulder City conservation easement
- Other features**
 - Primary road
 - Secondary/State road
 - Railroad
 - Jurisdictional boundary

Flight Corridor Identification

Charleston	Existing arrival flight corridor along Charleston Boulevard
Tropicana	Existing departure flight corridor along Tropicana Avenue
Henderson	South of Sloan potential flight corridor #1
McCullough	South of Sloan potential flight corridor #2
Jean	South of Sloan potential flight corridor #3
Strip Railroad	South of Sloan potential flight corridor #4 (at sunset only)

Sources: Clark County Department of Aviation; Census TIGER/Line 2000 Data.
Prepared by: Ricondo & Associates, Inc., April 2008.

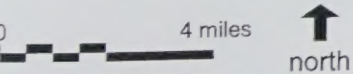


Exhibit IV-10

Income of Residents
in the Las Vegas Region

December 2008

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Proposed Action

According to the 2000 U.S. Census, about 19 percent of the people in the vicinity of the Heliport site are 17 years old or younger, which is a lower percentage than in the County as a whole and less than one percentage point higher than in the vicinity of McCarran. The percentage of individuals classified as children within the Heliport Site area is not disproportionately higher than the percentage of children in Clark County as a whole. As no significant impacts are anticipated within the Area of Disturbance under the Proposed Action, it is anticipated that the Proposed Action would not significantly affect children residing within the Heliport site area.

No Action Alternative

About 19 percent of the residents in the McCarran site area are 17 years of age or younger. This percentage is lower than in Clark County as a whole. Under the No Action alternative, these populations would continue to be affected by an increasing number of Grand Canyon helicopter overflights along the existing corridors.

Overflight Area

The percentage of people defined in the 2000 Census as children and living beneath or near the Overflight Area associated with the potential helicopter flight corridors for the proposed Heliport is comparable to the percentage of children living beneath or near the existing helicopter flight corridors. As no adverse impacts in other environmental resource categories are anticipated, no adverse impacts to children within the Overflight Area are anticipated under the Proposed Action. Under both the Proposed Action and the No Action alternative, children living in neighborhoods beneath and near the existing flight corridors would continue to experience helicopter overflights; however helicopter noise levels in established residential communities beneath the Tropicana and Charleston helicopter flight corridors associated with Grand Canyon helicopter tour overflights would be lower under the Proposed Action than the No Action alternative since there would be fewer overflights.

4.4 Air Quality

The air quality assessment performed for this EA is intended to show the potential impacts that may result from construction and operation of the Heliport. Potential effects on air quality associated with the Proposed Action must be analyzed for compliance with the National Environmental Policy Act and the Clean Air Act, as amended by the Clean Air Act Amendments of 1990.

NEPA requires consideration of the relationship of any proposed FAA action to air quality. The primary sources of guidance for NEPA compliance are FAA Orders 5050.4B and 1050.1E and the *Air Quality Procedures for Civilian Airports and Air Force Bases* (Airport Air Quality Handbook) [III-19]. Typically an emissions inventory is prepared for the Proposed Action and each reasonable alternative, including the No Action alternative. Additional analyses, including dispersion modeling or roadway intersection hot spot analyses are not normally required if the estimated emissions of each criteria pollutant (see Section 3.8) do not exceed thresholds listed in the general conformity regulations. As part of a NEPA air quality analysis, a NAAQS assessment (including dispersion modeling) is sometimes conducted for the Proposed Action and reasonable alternatives. A formula¹⁵

¹⁵ The formula considers the level of general aviation and air taxi operations at a facility and the number of airport passengers. If the level of activity at an airport is below a certain threshold, a NAAQS assessment is usually not required.

presented in the Airport Air Quality Handbook can be used as a guide to determine whether a NAAQS assessment should be performed for a Proposed Action; however the nature of the project should also be considered in consultation with state or regional air quality regulatory staff.

The Clean Air Act Amendments of 1990 require federal agencies to ensure that their actions conform to the appropriate SIP. Conformity is defined as demonstrating that a project or action conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Federally funded and approved actions at airports are subject to the EPA's "General Conformity" regulations. The EPA has published a final rule regarding general conformity determinations [IV-8]. The final rule includes annual emissions thresholds for nonattainment areas and maintenance areas that trigger the need for a general conformity determination and defines projects that are generally excluded from general conformity.¹⁶ A conformity determination is required if one of the following occurs: (1) the total direct and indirect pollutant emissions¹⁷ resulting from a project are above *de minimis*¹⁸ emissions threshold levels specified in the conformity regulations, and/or (2) pollutant emissions from the project would be regionally significant (i.e., the project would contribute 10 percent or more of the region's total emissions for a criteria pollutant).

Two models were used to perform the required air quality assessments: the EDMS and MOBILE6.2. EDMS Version 4.3 was used to calculate emissions of criteria pollutants generated by helicopters, auxiliary power units (APUs), GSE, ground access vehicles, training fires, and stationary sources. MOBILE6.2 was used to determine emissions of carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOC), oxides of sulfur (SO_x), particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}) from ground access vehicles and on-road construction vehicles. Specific local characteristics were used in the MOBILE6.2 model to increase the accuracy of the output. The Clark County Department of Air Quality and Environmental Management developed the MOBILE6.2 emission factors for all analysis years.

Criteria pollutants would also be emitted during the construction of the Heliport. Construction activities would be expected to begin during the third quarter of 2008 and be completed in 2010. Construction-related emissions were analyzed using standard industry methodologies and techniques. The specific techniques used to estimate operational and construction-related emissions for the Proposed Action and the No Action alternative are described in Appendix F.

4.4.1 Summary of Findings

Criteria pollutant emissions, including CO, SO_x, PM₁₀, PM_{2.5}, and the ozone precursor pollutants (NO_x and VOC) would be higher under the Proposed Action than under the No Action alternative; however emissions levels would be less than significant. Neither the Proposed Action nor the No Action alternative would be expected to cause or contribute to exceedances of the NAAQS. Neither construction emissions under the Proposed Action, nor differences in heliport operational emissions under the Proposed Action compared with the No Action alternative would exceed the

¹⁶ Projects that are excluded from General Conformity are listed at 40 CFR §93.153(c)(2).

¹⁷ Total direct and indirect emissions are the sum of the emissions increases and decreases associated with a proposed project, or the "net" change in emissions anticipated to occur as a result of the proposed project (40 CFR §93.152).

¹⁸ Emissions are so small as to be negligible or insignificant. If a project/action has *de minimis* emissions, a conformity determination/NAAQS assessment pursuant to the *Clean Air Act Amendments of 1990* is not required (40 CFR §93.153c).

applicable *de minimis* thresholds nor would emissions or differences in emissions be regionally significant. Therefore, in accordance with the general conformity regulations, a general conformity determination is not required for the Proposed Action. While mitigation measures are not required, various techniques would be used to minimize criteria pollutant emissions associated with construction of the Heliport. (See Section 4.20.3.)

4.4.2 Environmental Consequences

4.4.2.1 NEPA Emissions Analysis

Inventories of construction related emissions under the Proposed Action and operational emissions under the Proposed Action and the No Action alternative were prepared. The results of the emissions inventory analysis are summarized in **Table IV-5**. Emissions of CO, SO_x, PM₁₀, PM_{2.5}, and the ozone precursor pollutants (NO_x and VOC) would be less than significant under both the Proposed Action and No Action alternative.

Table IV-5

Emissions Inventories – Proposed Action and No Action Alternative (tons per year)

	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate Matter (PM ₁₀)	Fine Particulate Matter (PM _{2.5})
Proposed Action						
Construction Emissions						
2008	1.911	0.345	2.457	0.072	28.258	0.488
2009	16.486	2.229	12.466	0.398	57.716	4.715
2010	14.981	33.958	13.678	0.237	47.200	4.305
Operational Emissions						
2011 ^{1/}	45.339	7.144	12.759	2.366	8.754	4.880
2017 ^{1/}	51.952	7.944	12.986	2.867	10.729	6.206
No Action Alternative						
Construction Emissions						
2008	—	—	—	—	—	—
2009	—	—	—	—	—	—
2010	—	—	—	—	—	—
Operational Emissions						
2011	30.045	4.917	9.564	1.874	4.466	3.863
2017	35.878	5.724	9.911	2.253	5.589	4.883

Note:

1/ Operational emissions were calculated for the two locations expected to accommodate helicopter tour operations under the Proposed Action: the Heliport site and McCarran International Airport.

Sources: Ricondo & Associates, Inc., 2008, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from the Clark County Department of Aviation and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., December 2008

Proposed Action

Construction emissions at the Heliport site were calculated for each construction year (2008, 2009, and 2010). Operational emissions at the Heliport site and McCarran were calculated for the expected first full year of operations of the Heliport (2011), as well as a future conditions year (2017). Under the Proposed Action, some helicopter air tour operations would remain at McCarran although the Heliport would be constructed. Therefore, total operational emissions under the Proposed Action include emissions generated by activity at both the Heliport site and McCarran.

No Action Alternative

No construction activities are anticipated to occur under the No Action alternative; therefore no construction emissions are anticipated. Operational emissions under the No Action alternative were calculated at McCarran for the analysis years 2011 and 2017.

4.4.2.2 Dispersion Analysis/NAAQS Assessment

A NAAQS assessment for the Proposed Action is not needed to satisfy NEPA requirements because projected operations and passenger levels are below thresholds set by the FAA in the Airport Air Quality Handbook. Nevertheless, dispersion modeling was conducted for the Proposed Action and the No Action alternative in response to scoping comments received from the U.S. EPA requesting an assessment of the potential for the Proposed Action to cause or contribute to exceedances of the CO and PM₁₀^{19,20} NAAQS. (See **Appendix G** for scoping comments.) Under the Proposed Action, it is assumed that helicopter air tour operations would be performed at multiple facilities; however, dispersion modeling was conducted only for the Heliport. Under the No Action alternative, dispersion modeling was conducted for McCarran. Therefore, dispersion modeling was conducted at the facility that would accommodate the highest level of forecast helicopter operations under each alternative.

EDMS dispersion modeling was conducted for 2017, the year with the highest CO and PM₁₀ operational emissions under the Proposed Action and the No Action alternative. In preparing for the dispersion analyses, data regarding helicopter operations and facilities layouts were assembled and documented. 8-hour average CO concentrations and 24-hour average PM₁₀ concentrations under the Proposed Action were calculated at 100 receptor locations in a 10 by 10 grid centered over the Heliport site and spaced 1,000 feet apart. 8-hour average CO concentrations and 24-hour average PM₁₀ concentrations under the No Action alternative were calculated at 100 receptor locations centered over McCarran International Airport and spaced 1,000 feet apart. EDMS modeled concentrations were added to background concentrations and compared with the relevant CO and PM₁₀ NAAQS. Background concentrations of CO and PM₁₀ for each site were obtained from the Clark County Department of Air Quality and Environmental Management (see Section 3.8.4). The methodology followed and key assumptions used for the dispersion modeling (including the location of dispersion receptors) are described in Appendix F.

The following paragraphs present the results of the dispersion analysis.

Proposed Action

The 10 highest 8-hour average CO concentrations and 24-hour average PM₁₀ concentrations estimated by the EDMS for receptors in the vicinity of the Heliport site are presented in **Table IV-6**. As shown in the table, the calculated 8-hour average CO concentrations and 24-hour average PM₁₀ concentrations associated with the Proposed Action are below the applicable NAAQS.

¹⁹ As described in Section 3.8.2, the nonattainment areas for CO and PM₁₀ roughly coincide with Hydrographic Area 212, which encompasses the Las Vegas region. Hydrographic Area 212 is designated as nonattainment for the 8-hour CO NAAQS and the 24-hour PM₁₀ NAAQS.

²⁰ Because ozone is a regional pollutant and ambient concentrations can only be predicted using regional photochemical models that account for all sources of precursors, the EA dispersion modeling analysis did not include ozone.

Table IV-6**Pollutant Concentrations – Proposed Action**

8-Hour Average Carbon Monoxide Concentrations (parts per million)				24-Hour Average PM ₁₀ Concentrations (micrograms per cubic meter)			
Receptor	Concentration	Background	Total Concentration	Receptor	Concentration	Background	Total Concentration
46	0.003297298	1.4	1.403297298	56	1.008246000	71.0	72.008246000
56	0.002976255	1.4	1.402976255	57	0.930516384	71.0	71.930516384
57	0.002522894	1.4	1.402522894	45	0.873552356	71.0	71.873552356
45	0.002354899	1.4	1.402354899	46	0.402149808	71.0	71.402149808
47	0.001164081	1.4	1.401164081	55	0.228046685	71.0	71.228046685
55	0.000805294	1.4	1.400805294	47	0.190305123	71.0	71.190305123
67	0.000682459	1.4	1.400682459	67	0.158308082	71.0	71.158308082
36	0.000615668	1.4	1.400615668	66	0.150247123	71.0	71.150247123
58	0.000611529	1.4	1.400611529	35	0.140880247	71.0	71.140880247
35	0.000610702	1.4	1.400610702	58	0.140634384	71.0	71.140634384
NAAQS			9.0	NAAQS			150.0

Notes:

PM₁₀ = Particulate matter of 10 micrometers or less

NAAQS = National Ambient Air Quality Standards

Source: Ricondo & Associates, Inc., 2008, based on output from the Emissions and Dispersion Modeling System, Version 4.3

Prepared by: Ricondo & Associates, Inc., December 2008

No Action Alternative

The 10 highest 8-hour average CO and 24-hour average PM₁₀ concentrations estimated by the EDMS for receptors in the vicinity of McCarran are presented in **Table IV-7**. As shown in the table, these estimated concentrations associated with the No Action alternative are below the applicable NAAQS.

Table IV-7**Pollutant Concentrations – No Action Alternative**

8-Hour Average Carbon Monoxide Concentrations (parts per million)				24-Hour Average PM ₁₀ Concentrations (micrograms per cubic meter)			
Receptor	Concentration	Background	Total Concentration	Receptor	Concentration	Background	Total Concentration
68	0.008693403	3.0	3.008693403	69	1.437064658	89.0	90.437064658
56	0.004427714	3.0	3.004427714	68	0.656616411	89.0	89.656616411
67	0.003976998	3.0	3.003976998	79	0.384941836	89.0	89.384941836
69	0.003711224	3.0	3.003711224	56	0.333970384	89.0	89.333970384
55	0.002677738	3.0	3.002677738	55	0.314935096	89.0	89.314935096
79	0.002453981	3.0	3.002453981	67	0.306134822	89.0	89.306134822
66	0.002061965	3.0	3.002061965	70	0.249312877	89.0	89.249312877
57	0.002046911	3.0	3.002046911	32	0.210959589	89.0	89.210959589
78	0.002033922	3.0	3.002033922	66	0.184850822	89.0	89.184850822
45	0.001713869	3.0	3.001713869	80	0.181205315	89.0	89.181205315
NAAQS			9.0	NAAQS			150.0

Notes:

PM₁₀ = Particulate matter of 10 micrometers or less

NAAQS = National Ambient Air Quality Standards

Source: Ricondo & Associates, Inc., 2008, based on output from the Emissions and Dispersion Modeling System, Version 4.3.

Prepared by: Ricondo & Associates, Inc., December 2008

4.4.2.3 General Conformity Applicability Analysis

As described in Section 3.8 of this EA, both the Heliport site and McCarran are located within Hydrographic Area 212. Hydrographic Area 212 is designated a serious nonattainment area for PM₁₀ and CO, and the applicable general conformity *de minimis* threshold levels are 70 tons per year of PM₁₀ and 100 tons per year of CO. Hydrographic Area 212 is designated attainment for PM_{2.5}, NO₂, SO₂, and lead, and therefore general conformity is not applicable to these pollutants. In addition, the two sites are located in a basic nonattainment area for the 8-hour ozone standard. Therefore, the applicable *de minimis* thresholds are 100 tons per year of VOC and 100 tons per year of NO_x²¹.

To determine whether a general conformity determination would be required for the Proposed Action, an applicability analysis was conducted. Operational and construction emissions inventories were prepared for the Proposed Action and the No Action alternative as part of the NEPA emissions analysis (see Section 4.4.2.1). The difference in CO, VOC, NO_x, and PM₁₀ emissions under the Proposed Action and the No Action alternative, by year, were computed and compared against applicable *de minimis* threshold levels.

Table IV-8 presents the net change in emissions with the Proposed Action compared to the No Action alternative. As shown, differences in construction-related emissions (2008, 2009, and 2010) and operational emissions (2011 and 2017) under the Proposed Action compared to the No Action alternative would be below established *de minimis* thresholds. In addition, the emissions generated by implementation of the Proposed Action would not be regionally significant. Therefore, a general conformity determination is not required for the Proposed Action. No adverse air quality impacts are expected to result from implementation of the Proposed Action and the Proposed Action is presumed to conform with the SIPs for the Las Vegas region.

4.4.2.4 Climate Change/Greenhouse Gases

Based on FAA data, operations activity at the proposed Heliport represents less than 0.01 percent of U.S. aviation activity. Therefore, assuming that greenhouse gases occur in proportion to the level of activity, greenhouse gas emissions associated with existing and future aviation activity at the proposed Heliport would be expected to represent less than 0.01 percent of U.S.-based greenhouse gases. Therefore, emissions of greenhouse gases are expected to be less than significant under the Proposed Action and No Action alternative.

²¹ Following standard industry practice, the evaluation of ozone was conducted by evaluating emissions of VOC and NO_x, which are precursors in the formation of ozone.

Table IV-8

General Conformity Applicability Analysis

	Relevant Criteria Pollutant Emissions (tons per year)			
	CO	VOC	NO _x	PM ₁₀
Proposed Action				
Construction Emissions				
2008	1.911	0.345	2.457	28.258
2009	16.486	2.229	12.466	57.716
2010	14.981	33.958	13.678	47.200
Operational Emissions ^{1/}				
2011	45.339	7.144	12.759	8.754
2017	51.952	7.944	12.986	10.729
No Action Alternative				
Construction Emissions				
2008	—	—	—	—
2009	—	—	—	—
2010	—	—	—	—
Operational Emissions				
2011	30.045	4.917	9.564	4.466
2017	35.878	5.724	9.911	5.589
Net Change				
2008	1.911	0.345	2.457	28.258
2009	16.486	2.229	12.466	57.716
2010	14.981	33.958	13.678	47.200
2011	15.294	2.227	3.195	4.288
2017	16.074	2.220	3.075	5.140
De minimis threshold	100.0	100.0	100.0	70.0
Difference (under)/over de minimis threshold				
2008	(98.098)	(99.655)	(97.543)	(41.742)
2009	(83.514)	(97.771)	(87.534)	(12.284)
2010	(85.019)	(66.042)	(86.322)	(22.800)
2011	(84.706)	(97.773)	(96.805)	(65.712)
2017	(83.926)	(97.780)	(96.925)	(64.860)
Regional Emissions				
	CO ^{2/}	Ozone Precursors ^{3/}	PM ₁₀ ^{4/}	
Las Vegas Metropolitan Area emissions (tons per year)	174,882	n.a.	31,600	

Notes:

- 1/ Operational emissions were calculated for the two locations expected to accommodate helicopter air tour operations under the Proposed Action: the Heliport site and McCarran International Airport. Therefore, operational emissions under the Proposed Action include emissions generated from helicopter operations at both the Heliport site and McCarran.
- 2/ Total emissions are for 1996 based on average tons per day data, as presented in the Carbon Monoxide State Implementation Plan [III-14].
- 3/ Clark County has until 2009 to develop an 8-hour ozone State Implementation Plan.
- 4/ Total emissions are for 1998, as reported in the PM₁₀ State Implementation Plan [III-15].

Sources: Ricondo & Associates, Inc., 2008, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from the Clark County Department of Aviation, The Louis Berger Group, Inc., and HNTB Corporation

Prepared by: Ricondo & Associates, Inc., December 2008

4.4.2.5 Hazardous Air Pollutants

Hazardous Air Pollutants (HAPs) are compounds for which there are no NAAQS but are still considered by the U.S. EPA as air pollutants. For this evaluation, an emission inventory of HAPs has been prepared from the same set of emission source (i.e., aircraft, GSE, motor vehicles) data and information collected and developed for the criteria-based air pollutant emissions inventories presented in Table IV-5 of the Final EA.

The HAPs emissions inventory is provided in this Final EA for NEPA disclosure purposes only and should not be relied upon for an assessment of health risks. Furthermore, the results should not be compared to other sources of HAPs in the region or compared to HAP emissions reported at other airports. The purpose of this evaluation was to disclose potential HAP emission levels with and without the construction of the proposed Heliport.

Table IV-9 presents a comparison of HAPs levels in 2017 under the Proposed Action and No Action alternative. Emissions of 19 different HAPs commonly associated with aviation activities were evaluated in the analysis. As presented in Table IV-9, formaldehyde is the HAP of greatest abundance associated with the proposed new heliport. Acetaldehyde, acrolein, toluene, and benzene are other HAPs emitted by Heliport-related emission sources. HAPs levels are anticipated to be slightly higher under the Proposed Action than under the No Action alternative, which is consistent with the air quality analyses conducted for criteria pollutants.

Details of the HAPS emissions inventory for the proposed Heliport are contained in Appendix F.

Table IV-9

2017 Emissions Inventory – Hazardous Air Pollutants

Hazardous Air Pollutant	Emissions (tons/year)	
	Proposed Action	No Action Alternative
Formaldehyde	0.899	0.697
Methyl alcohol	0.117	0.092
Benzene	0.176	0.107
Acetaldehyde	0.332	0.253
Napthalene	0.038	0.029
O-xylene	0.034	0.015
Isopropylbenzene (cumene)	0.001	0.000
Ethyl benzene	0.033	0.015
Styrene	0.025	0.017
1,3 - butadiene	0.118	0.088
Acrolein	0.159	0.125
Toluene	0.195	0.072
Phenol (carbolic acid)	0.047	0.037
M & P - xylene	0.079	0.028
Propionaldehyde	0.053	0.041
Acetone	0.073	0.053
2-methylnaphthalene	0.026	0.021
Benzaldehyde	0.036	0.027
N-heptane	0.008	0.004

Sources: Helicopter speciation profiles – EDMS 5.1; U.S. EPA SPECIATE Profile No. 3161, *Diesel Exhaust: Light & Heavy* and SPECIATE Profile No. 1314, *10% Ethanol Exhaust*

Prepared by: Ricondo & Associates, Inc., December 2008

4.5 Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACEC) are BLM-managed public lands, designated through administrative action by the Secretary of the Interior, that require special management attention to prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems; or to protect life and safety from natural hazards.

While there are several ACECs designated in the Las Vegas region, two ACECs are beneath the Overflight Area: the River Mountains ACEC and Rainbow Gardens (Frenchman Mountain) ACEC; there are no ACECs in the Area of Disturbance. The River Mountains ACEC is located immediately west of the LMNRA and is generally located north of Boulder City and south of the Clark County Wetlands Park. This area provides hiking and biking trails, such as the River Mountains Loop Trail. The Rainbow Gardens area was designated as an ACEC to protect and manage known Las Vegas Bearpoppy habitat (from illegal dumpings and unauthorized off-road vehicle activity in the area).

Overflights of these two ACECs, as shown on **Exhibit IV-11**, are discussed in Section 4.6, Department of Transportation, Section 4(f) Lands.

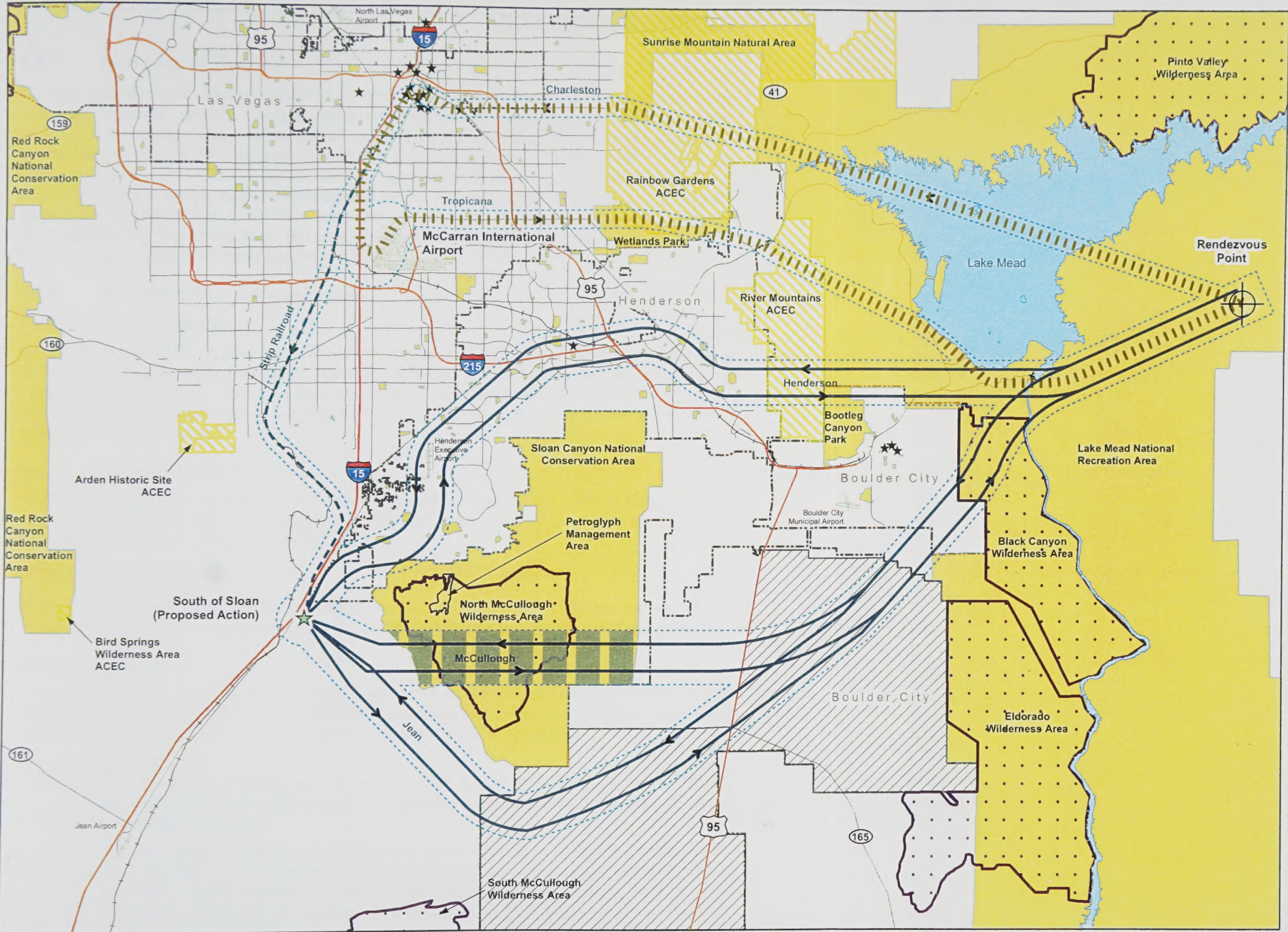
4.6 Department of Transportation, Section 4(f) Lands

Section 4(f) of the U.S. Department of Transportation (DOT) Act provides that the U.S. DOT “may not approve the use of land from a significant publicly owned public park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that:” (1) no feasible and prudent alternative to the use of such land, and (2) such a program or project shall include all possible planning to minimize any adverse effects resulting from use of the land. A description of recreation, conservation, wilderness, Area of Critical Environmental Concern, resource areas and local parks is provided in Section 3.9.

The use of Section 4(f) lands occurs when there is either a permanent commitment of a Section 4(f) site for a project (direct use), or where the proximity of a project to the Section 4(f) site, without acquisition of the land, substantially impairs the value and utility of the land (indirect use, constructive use). As defined in the FAA guidance, constructive use occurs when a proposed project substantially impairs the features, attributes, or activities of the resource that contribute to the significance of the resource.

Constructive use does not occur when the requirements of Section 106 of the *National Historic Preservation Act of 1974*, as amended [III-30] and related regulations in the *Protection of Historic Properties* [IV-9] result in an agreement of “no effect” or “no adverse effect”.

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Legend

- ★ Proposed heliport site
- ☆ Site listed in National Register of Historic Places
- ★ Structure listed in National Register of Historic Places
- Yellow shaded area: National Conservation and Recreation Areas, Natural Areas, and Local Parks
- Dotted area: Wilderness area
- Yellow hatched area: Area of Critical Environmental Concern (ACEC)

Helicopter flight corridors

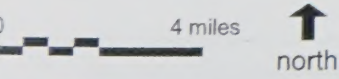
- Thick dashed line: McCarran International Airport existing flight corridor to or from the Grand Canyon
- Thin solid line: Potential flight corridor to and/or from the Grand Canyon
- Thin dashed line: Potential flight corridor from the Grand Canyon (during and after sunset)
- Thin dotted line: Corridor boundary
- Arrow: Direction of traffic
- Green hatched area: Flight path allowed by Congressional legislation for helicopter tours originating or concluding at the South of Sloan site and crossing the Sloan Canyon National Conservation Area
- Blue hatched area: Boulder City conservation easement

Other features

- Thick solid line: Primary road
- Thin solid line: Secondary/State road
- Line with cross-ticks: Railroad
- Dashed line: Jurisdictional boundary

Flight Corridor Identification	
Charleston	Existing arrival flight corridor along Charleston Boulevard
Tropicana	Existing departure flight corridor along Tropicana Avenue
Henderson	South of Sloan potential flight corridor #1
McCullough	South of Sloan potential flight corridor #2
Jean	South of Sloan potential flight corridor #3
Strip Railroad	South of Sloan potential flight corridor #4 (at sunset only)

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc., August 2007; Clark County Information Technology; Clark County GIS Management Office.
Prepared by: Ricondo & Associates, Inc., April 2008.



National Conservation and Recreation Areas, Natural Areas, Local Parks, and Areas of Critical Environmental Concern

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4.6.1 Summary of Findings

No significant direct or indirect impacts to, or constructive use of, Section 4(f) lands would occur under the Proposed Action. Several parks and recreational facilities, two wilderness areas, two ACECs, three major conservation and recreation areas, and several cultural resources are located beneath the Overflight Area associated with the potential helicopter flight corridors under the Proposed Action. However, no significant helicopter noise impacts would occur as a result of implementing the Proposed Action compared with the No Action alternative. In addition, at Sites R1 through R8, predicted noise levels from helicopter operations alone under the Proposed Action for 2011 and 2017 are anticipated to be less than existing DNL values as measured during the ambient noise level monitoring at the same locations in 2004.

4.6.2 Environmental Consequences

4.6.2.1 Proposed Action

Exhibit IV-11 shows the location of DOT Section 4(f) lands within the Las Vegas region; the types of resources include wilderness areas, conservation areas, and archaeological and ethnographic resources whose value lies mainly in their preservation. As shown on Exhibit IV-11, there are no Section 4(f) lands on the Heliport site; therefore, there would be no direct use of Section 4(f) lands under the Proposed Action.

4.6.2.2 No Action Alternative

Under the No Action alternative, Grand Canyon helicopter air tours would continue to operate from McCarran. No new facilities would be constructed at McCarran under the No Action alternative and there would be no direct use of Section 4(f) lands.

4.6.2.3 Overflight Area

The potential for indirect effects on, or constructive use of, Section 4(f) lands was considered with regard to helicopter noise near the Heliport site and McCarran, and beneath the Overflight Area.

Proposed Action

As shown on Exhibit IV-11, helicopters using the potential helicopter flight corridors associated with the Proposed Action would overfly *publicly owned* recreation areas, wildlife areas, and Clark County and city parks, and would possibly overfly NRHP-listed or NRHP-eligible sites.

- **Heliport site:**

- The Henderson corridor, as defined, overflies the western areas of the LMNRA²², portions of the River Mountains ACEC, Boulder City Recreation Area, and city parks, two NRHP-listed sites;
- The McCullough corridor, as defined, overflies western areas of LMNRA, portions of the North McCullough Wilderness Area and the Sloan Canyon NCA, as designated by Public Law 109-115 [I-6], one NRHP-listed site, one known NRHP-eligible site, Black Canyon Wilderness Area, and the Boulder City conservation easement area in the Eldorado Valley;

²² Recreational activities in the LMNRA are discussed in Section 3.9.

- The Jean corridor, as defined, overflies western areas of the LMNRA, 1 NRHP-listed site, Black Canyon Wilderness Area, and the Boulder City conservation easement area in the Eldorado Valley;
- The Strip Railroad corridor, as defined, overflies portions of the LMNRA, portions of the Rainbow Gardens ACEC, portions of the Sunrise Mountain Natural Area, County and city parks, and 8 to 10 NRHP-listed sites. More than two-thirds of the length of the Strip Railroad corridor would follow an existing helicopter flight corridor (Charleston).
- **McCarran International Airport:**
 - The existing Tropicana and Charleston corridors, as defined, overfly portions of the LMNRA, portions of the Rainbow Gardens ACEC, portions of the River Mountains ACEC, Clark County Wetlands Park, the Sunrise Mountain Natural Area, County and city parks, and 9 to 11 NRHP-listed sites.

Sites R4, R5 (Sloan Canyon petroglyphs) and R6 were selected to document existing ambient noise levels within the Sloan Canyon NCA and the North McCullough Wilderness Area. Noise measurement data for Sites R4, R5 and R6 are presented in Appendix D. The hourly maximum noise levels (L_{max}) measured at Site R4 on October 28, 2004 ranged between 58 dBA and 75 dBA. The measured DNL at Site R4 on that day was 56.2. The hourly maximum noise levels (L_{max}) measured at Site R5 (Sloan Canyon petroglyphs) on October 28, 2004 ranged between 29 dBA and 77 dBA. The measured DNL at Site R5 on that day was 50.2. The hourly L_{max} values measured at Site R6 on October 28, 2004 ranged between 41 dBA and 75 dBA. The measured DNL at Site R6 on that day was 49.4.

Sites within the Sloan Canyon NCA and beneath the McCullough flight corridor would be exposed to helicopter noise of DNL 26 to DNL 44 in 2017 if the helicopters fly at an altitude between 300 and 1,500 feet AGL. Helicopters returning via the Las Vegas Strip would use the Charleston/Strip Railroad flight corridor; sites beneath this flight corridor would be exposed to helicopter noise between DNL 38 and DNL 48 in 2017, depending on the altitude of the helicopter above the ground.

The Congressionally legislated McCullough corridor for Grand Canyon helicopter air tours would overfly portions of the Sloan Canyon NCA and the North McCullough Wilderness Area [I-6]. Some sites within the Sloan Canyon NCA are eligible for listing in the NRHP, including the Sloan Canyon Petroglyphs site. The rock art located within the Sloan Canyon NCA and the North McCullough Wilderness Area is of religious and cultural importance to Native Americans and is one of the principal significant attributes of the conservation and wilderness area.

As previously mentioned in Section 1.4, the specific provision prohibits overflights of the Sloan Canyon NCA by helicopter air tours originating or concluding at the heliport site except within the two-mile corridor that is between 3 and 5 miles north of the southern boundary²³, and further requires that operations exceed 1,000 feet in altitude over the eastern segments and 500 feet over the western segments [I-6]. Recognizing that noise from aircraft overflights is an existing condition in the North McCullough Wilderness Area (Section 204 of the Act), Congress mandated the McCullough flight corridor to “ensure that such flights steer clear of the most sensitive and special cultural resources and minimized the impact on the majestic bighorn sheep and other wildlife that live in the McCullough Mountains.”²⁴

²³ Exhibit I-1 shows the Congressionally prescribed McCullough flight corridor.

²⁴ Cong. Rec. s1540-41

Further, as presented in Table IV-1, helicopter noise exposure would be lower than DNL 30 at the NRHP-listed Sloan Canyon Petroglyphs. Calculated helicopter noise levels for grid points beneath and near the McCullough corridor within the Sloan Canyon NCA and the North McCullough Wilderness Area are predicted to be lower than ambient noise levels measured at the same grid point locations in 2004.

Congress imposed the flight corridor for helicopter air tour operations within the Sloan Canyon NCA specifically to protect the petroglyphs and bighorn sheep, two of the primary resources Congress sought to protect in establishing the Sloan Canyon NCA and the North McCullough Wilderness Area. With these protections in place and considering the calculated noise levels, the Proposed Action would not substantially impair the features and attributes that contribute to the Sloan Canyon NCA's significance.

As discussed in Chapter II, both existing flight corridors, Tropicana and Charleston (see grid points R1 and R2, respectively, on Exhibit IV-5) directly overfly areas of the LMNRA enroute to the Rendezvous Point. As shown on Table IV-1, predicted noise levels under the Proposed Action along grid points R1 and R2 would be DNL 50 or below at grid point R1 and below DNL 35 at grid point R2, both of which are lower noise exposure values than would occur under the No Action alternative at those same locations. Since grid points R1 and R2 are representative of all areas along the Tropicana and Charleston corridors, it may be concluded that helicopter noise exposure and the corresponding number of helicopter over-flights would be less under the Proposed Action than under the No Action Alternative along those routes. Moreover, the relocation of Grand Canyon helicopter air tours to other areas of LMNRA, including the Black Canyon Wilderness Area, would not substantially impair the resource considering: (i) the same number of helicopter air tour operations would occur within LMNRA under the No Action and Proposed Action, only the location of overflights within the park would change; (ii) the predicted noise levels under the Proposed Action would remain at or below measured noise levels for all relevant grid points and sites; (iii) the areas of LMNRA that would experience relocated helicopter air tour overflights currently experience aircraft overflights, motorized boating, and/or other man-made noise and do not appear to be managed to preserve or restore a quiet setting, and (iv) the areas that would potentially receive new overflights are within similar acoustic zones as identified by the National Park Service as those that currently receive overflights and would continue to receive overflights under the No Action alternative.

The Henderson corridor overflies a number of existing and proposed park and recreational facilities within Clark County and the City of Henderson. (See Table III-10.) The parks are located within an urban environment and are predominantly used for recreational and sporting activities. Potential noise levels along the Henderson corridor associated with the Proposed Action would not be significant and the types of activities accommodated at the parks are not of a nature that would be affected by helicopter overflights.

It is anticipated that there would be no substantial interference with the use or enjoyment of Section 4(f) lands or other park and recreational facilities, no substantial impairment of the attributes of Section 4(f) lands, and no substantial diminishment of the access to, the utility of, or the value of Section 4(f) lands under the Proposed Action.

No Action Alternative

As discussed in Section 4.1, no noise-sensitive land uses would be exposed to helicopter noise of DNL 65 and higher under the No Action alternative and helicopter noise of DNL 65 and higher would be contained within the McCarran site boundary in 2011 and 2017. As shown on

Exhibit IV-11, the existing flight corridors for the No Action alternative currently overfly Section 4(f) lands including *publicly owned* recreation areas, wildlife areas, and parks. Sites beneath the Charleston and Tropicana flight corridors would be exposed to helicopter noise between DNL 45 and DNL 55 in 2017, depending on the altitude of the helicopter above the ground. It is anticipated that there would be no substantial interference with the use or enjoyment of Section 4(f) lands, no substantial impairment of the attributes of Section 4(f) lands, and no substantial diminishment of access to, the utility of, or the value of Section 4(f) lands under the No Action alternative. Therefore, it is anticipated that there would be no significant indirect or constructive use of DOT Section 4(f) lands near McCarran or along the helicopter flight corridors associated with the No Action alternative.

4.7 Historic, Architectural, Archaeological, and Cultural Resources

In accordance with FAA Orders 1050.1E and 5050.4B, a proposed project would adversely affect historic, architectural, archaeological, and/or cultural resources on, or eligible for listing on, the NRHP if the proposed project: (1) physically destroys the property, (2) severely alters the property such that it would no longer meet the requirements of the standards for treatment of historic properties [36 CFR Part 68], (3) physically removes the property from its historic location, or (4) substantially impairs the historical integrity of the resource by, for example, increasing air emissions and noise.

4.7.1 Summary of Findings

Literature reviews and pedestrian field surveys were conducted for the Heliport site and associated utility corridors. No historic, architectural, archaeological, or cultural properties eligible for or included in the NRHP are present at the Heliport site. Three NRHP eligible sites were located within the Area of Disturbance. The Arrowhead Highway (also known as Nevada State Route 604 and Las Vegas Boulevard South) is used and maintained regularly. No adverse impacts to this site are anticipated as a result of the construction of the underground communication utility. The two remaining sites are also located within the communication utility corridor; these sites may potentially become impacted. While Clark County proposes to mitigate potential adverse impacts through design and modification of the utility right-of-ways to avoid adverse impacts or, if avoidance is not prudent or feasible, by other mitigation, such as data recovery, determined in consultation with SHPO. Regardless of the type of mitigation employed, a qualified archaeologist will monitor construction activities within the potentially eligible sites to prevent inadvertent destruction of known archaeological resources.

The FAA has determined the proposed undertaking will not adversely affect any properties listed or eligible for listing on the NRHP. On May 13, 2008, the Nevada SHPO concurred with the FAA's determination that the proposed undertaking would not adversely affect historic properties "with the avoidance and monitoring requirements outlined". A copy of the SHPO's finding is provided in **Appendix H** as Attachment H-3.

4.7.2 Environmental Consequences

4.7.2.1 Proposed Action

Cultural resources surveys were completed for the Heliport site in 2004, including Class I literature reviews, field checks, and Class III pedestrian surveys; subsequent resource surveys of the utility corridors for extension of utilities were completed in December 2007 [III-34]. As described in

Section 3.10.2, no NRHP-eligible sites were found on the Heliport site; three NRHP-eligible cultural resources were recorded within the Area of Disturbance.

The Arrowhead Highway, also known as Las Vegas Boulevard South and Nevada State Road 604, is currently used. The segment between Jean and Henderson is well maintained and appears to have been repaved. Due to the existing and planned ongoing use of this site, it is not anticipated that construction of the underground communications utility would adversely impact the Arrowhead Highway.

The Sutor site is a railroad and road construction site located within the Area of Disturbance associated with the utility corridor. Several features, artifacts, and an additional possible privy depression were observed during the field survey. The macadam road, which runs to the southeast out of the site, has recently been fenced. The dugout is a historic site with can scatters and a privy on a valley floor. Existing site impacts include modern trash, off road activity, and erosion; the site is also bisected by Interstate 15 and Las Vegas Boulevard South. Both sites are located within the proposed alignment of the communication utility corridor. Clark County proposes to mitigate potential adverse impacts through design and modification of the utility alignment and right-of-ways to avoid adverse impacts or, if avoidance is not prudent or feasible, by other mitigation, such as data recovery, determined in consultation with SHPO. Regardless of the type of mitigation employed, a qualified archaeologist would monitor construction activities within the potentially eligible sites to prevent inadvertent destruction of known archaeological resources. The FAA has determined the proposed undertaking will not adversely affect any properties listed or eligible for listing on the NRHP. On May 13, 2008, the Nevada SHPO concurred with the FAA's determination that the proposed undertaking would not adversely affect historic properties "with the avoidance and monitoring requirements outlined". A copy of the SHPO's finding is provided in Appendix H as Attachment H-3.

The FAA also contacted the Nevada SHPO, the U.S. Department of the Interior, Bureau of Indian Affairs, and 15 federally recognized Native American tribes and bands in the Las Vegas region during preparation of this EA. In June 7, 2004 a Notice of Intent to prepare the EA was sent to various regulatory agencies and other stakeholders, including Native American tribes and bands. The Notice included a description of the Proposed Action, and requested comments and input. Two written responses were received from Native American tribes during consultation on the Southern Nevada Regional Heliport Project. Appendix H further details the SHPO and tribal consultation process and results.

4.7.2.2 No Action Alternative

Given that no new facilities would be constructed at McCarran and considering that there are no NRHP-listed or eligible sites in the vicinity of McCarran, no cultural, archaeological, nor historic properties would be adversely affected under the No Action alternative.

4.7.2.3 Overflight Area

As discussed in Section 4.6, the rock art found within the Sloan Canyon NCA is of cultural importance to Native Americans [IV-10]. The Sloan Canyon Petroglyphs site, located within the Sloan Canyon NCA, is listed in the NRHP. The McCullough corridor through the Sloan Canyon NCA was specifically established as part of Public Law 109-115, Section 180 to avoid direct overflight of the Sloan Canyon Petroglyphs by helicopter air tours originating or terminating at the proposed Heliport site and passing through the NCA. As a result, none of the potential helicopter

flight corridors associated with the proposed Heliport would overfly the Petroglyphs site. According to the helicopter noise analyses presented in Section 4.1 and Table IV-1, helicopter noise exposure would be lower than DNL 30 at the NRHP-listed Sloan Canyon Petroglyphs site because of the horizontal distance between the site and the McCullough flight corridor.

Table IV-10 provides a list of four sites²⁵ within the Sloan Canyon NCA that were identified by the Nevada SHPO as noise-sensitive sites to be considered in this EA. Information regarding the four sites was compiled from a survey of cultural resources within the Sloan Canyon NCA for the BLM [IV-10].

As shown in Table IV-10, the McCullough corridor would either overfly or be in the vicinity of the four cultural sites. Predicted helicopter noise levels at all four sites are anticipated to be below DNL 65. As discussed in Section 3.5.2, ambient noise levels measured at sites within the Sloan Canyon NCA ranged between DNL 49.4 and DNL 56.2, which is higher than the predicted helicopter noise levels at the cultural sites. Therefore, no adverse effects on these four cultural resources would be anticipated as a result of the Proposed Action and no mitigation measures would be required.

Table IV-10

Predicted Noise Levels for Properties Recommended for Consideration within the Sloan Canyon National Conservation Area

Site Number	Site Type	Cultural Affiliation/Date	NRHP Status	Nearest Potential Helicopter Flight Corridor	Predicted Helicopter Noise Level (DNL) ^{1/}
26CK6975	Rock art	Unknown	Eligible	McCullough	26-29
26CK3151	Rock art and milling site	Prehistoric and historic	Eligible	McCullough	40-44
26CK6978	Rock art	Unknown	Not eligible	McCullough	40-44
26CK6973	Rock art	Unknown	Eligible	McCullough	33-37

Notes:

NRHP = National Register of Historic Places

DNL = Day-night average sound level, expressed in A-weighted decibels

1/ Helicopter noise levels were modeled for 2011 and 2017 conditions. The maximum modeled flight altitude of 1,500 feet AGL is lower and more conservative than that anticipated to be flown in the vicinity of the cultural sites. Therefore, helicopter noise levels are expected to be lower than those reported here.

Sources: Far Western Anthropological Research Group. *Cultural Resources Survey (Random and Non-random) of the Sloan Canyon NCA, Clark County, Nevada*. 2003; Ricondo & Associates, Inc.; predicted helicopter noise level—Brown-Buntin Associates, Inc.

Prepared by: Ricondo & Associates, Inc., April 2008

4.8 Native American Religious Concerns

The *American Indian Religious Freedom Act of 1978* [IV-11] establishes national policy to protect and preserve the inherent rights of Native Americans to exercise their traditional religion and ceremonies, including rights to access religious and sacred places and to use and possess sacred objects. Executive Order 13007, *Indian Sacred Sites* [IV-12], requires that federal agencies respect and protect the rights of Native Americans to free exercise of their traditional religions and protect sites considered sacred to them.

²⁵ In order to ensure the preservation the cultural resources, the precise locations of the four sites, as identified for consideration in this EA by the Nevada SHPO, cannot be made public. Discussion of potential helicopter noise levels is framed so as not to reveal their locations.

See Section 4.6, Department of Transportation, Section 4(f) Lands, for discussion of Native American religious concerns, as they pertain to management of religious resources within the Sloan Canyon NCA. Section 4.7, Historic, Architectural, Archaeological, and Cultural Resources provides a discussion of the potential Native American concerns received through consultation with the federally recognized tribes and bands in the Las Vegas region.

4.9 Wilderness

The *Wilderness Act of 1964* [IV-13] establishes the National Wilderness Preservation System to preserve federal land designated by the U.S. Congress as a wilderness area to preserve unimpaired enjoyment for future use as a pristine wilderness area. The Secretary of the Interior reviews all federally owned land consisting of 5,000 acres or more and every roadless island within the national wildlife refuge and national park systems for possible inclusion into the National Wilderness Preservation System. Activities within the wilderness area must be compatible with the preservation of such lands. The *Clark County Conservation of Public Land and Natural Resources Act of 2002* [III-2] established 17 wilderness areas in the Las Vegas region in order to promote conservation and preserve wilderness areas in Clark County. Wilderness areas beneath the Overflight Area associated with the potential flight corridors for the proposed Heliport include the North McCullough, Eldorado, Black Canyon, and Rainbow Mountain. These lands are managed by the BLM and/or in part by the National Park Service or U.S. Forest Service.

The impacts to wilderness areas are related to helicopter overflights and the associated noise from those overflights. (See Section 4.1, Noise, for discussion of helicopter noise; and Section 4.6, Department of Transportation, Section 4(f) Lands, and for additional information regarding the effects of the alternatives on wilderness areas.) As described in those sections, the Proposed Action would result in the introduction of new helicopter overflights and their associated noise within wilderness areas along the McCullough or Jean corridors. As described, estimated DNL noise exposure from the helicopter overflights at locations representative of the wilderness areas would be comparable to or less than ambient DNL values measured at the those same locations during the noise measurement period as well as at FAA locations L05 and L07 within the Lake Mead National Recreation Area²⁶. In addition, flights along the McCullough corridor over the North McCullough Wilderness Area would specifically be limited to the two-mile wide corridor with the intent of protecting the most sensitive areas from helicopter overflights and their associated noise.

4.10 Fish, Wildlife, and Plants

The potential effects on fish, wildlife, and plants, including those that are considered State of Nevada or BLM-sensitive species are discussed in this section. Potential effects on federally listed threatened and endangered species that are protected under the Endangered Species Act are presented separately in Section 4.11. According to the BLM Manual 6840.06 C [III-37], the BLM policy is to provide BLM special status species the same level of protection as the U.S. Fish and Wildlife Service (USFWS) designation of “candidate species” to “ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed”.

²⁶ Federal Aviation Administration, *Baseline Ambient Sound Levels in Lake Mead National Recreation Area* (DOT-VNTSC-FAA-06-13), April 2006.

4.10.1 Summary of Findings

As described in Section 3.11.1.3, biological surveys of the Area of Disturbance revealed no State-listed or BLM-sensitive species on the Heliport site with the exception of the desert bighorn sheep. Special status species and potential habitat was also found within the utility corridor. Construction of the Proposed Action could result in direct loss of plants and wildlife and the permanent loss of general wildlife and plant habitat. Such impacts would be minimized through implementation of conservation measures, as detailed in the Biological Opinion issued from the USFWS on July 2008 (see **Appendix I**).

Based on limited existing research on wildlife sensitivities to overflights, estimated overflight altitudes and the nature of the overflights (e.g., hovering activities are not likely to occur), minor indirect impacts to wildlife beneath the Overflight Area would be expected as a result of the Proposed Action. While helicopter overflights have the potential to disturb wildlife in specific locations, helicopter overflights are not expected to have a significant impact on wildlife under the Proposed Action or No Action alternative.

4.10.2 Environmental Consequences

4.10.2.1 Proposed Action

In the short-term, construction activities and increased vehicular traffic throughout the Area of Disturbance could result in direct mortality of individual animals and crushing of animal burrows in the Area of Disturbance. Construction²⁷ of the Heliport and the utility corridor would include the temporary removal of about 331 acres of vegetation would be disturbed from construction activities; of those acres, 236 acres would be permanently removed for operation of the Heliport. Wildlife species that would typically be affected by these actions include small, less mobile ground dwelling mammals and reptiles. Larger, more mobile animals such as coyotes would be temporarily displaced as a result of construction activities and noise. Individual birds would also be temporarily displaced because of construction activity, human presence, and construction noise.

Site preparation and landscape grading under the Proposed Action would cause the long-term irretrievable loss of site soil and vegetation productivity as the result of the clearing of vegetation, removal and redistribution of soil, and removal of rocks and debris, followed by concrete and/or asphalt surfacing within the Heliport site area boundary. Grading activities would also be required in the short-term for construction staging areas, construction materials storage, fuel tanks, and vehicle and construction equipment parking areas, which would result in short-term adverse impacts on vegetation and soil productivity from disturbance of these natural resources. Construction activities would also increase the short-term potential for disturbance and/or death of wildlife from construction noise, human presence, and/or vehicle-wildlife collisions within the construction area. Short-term/construction impacts to fish, wildlife, and plants would be minimized through implementation of conservation measures detailed in the Biological Opinion (see **Appendix I**). See Section 4.12 for discussion of invasive, nonnative species.

As discussed in Section 3.11.1.3, several special status species and/or potential habitat were observed during biological field surveys of the Area of Disturbance. Construction of the Proposed Action would remove potentially suitable habitat and could result in the direct loss of wildlife. Potential impacts would be minimized through implementation of conservation measures, as detailed in the Biological Opinion.

²⁷ Construction-related activities were assumed to include grading and cut and fill activities.

4.10.2.2 No Action Alternative

Under the No Action alternative, a heliport would not be constructed and there would be no adverse impacts to wildlife or plants.

4.10.2.3 Overflight Area

Potential adverse effects to wildlife associated with helicopter flight corridors and associated noise from overflights are discussed below. It should be noted that (1) the altitudes at which the helicopters might be flown cannot be enforced through the process of, or as a result of, this EA; and (2) regulations do not provide a noise threshold against which potential impacts on animals can be evaluated. Measures to minimize potential adverse effects from helicopter overflights on wildlife are presented in Section 4.11.3 and are focused on potential helicopter flight altitudes above the ground. The distance between the helicopter and the ground can be referred to as height above ground level (AGL) or ground clearance.

The potential effect of low-flying aircraft on noise-sensitive land uses and wildlife is acknowledged in FAA AC 91-36D, *Visual Flight Rules (VFR) near Noise-Sensitive Areas* [IV-14]. The stated purpose of the AC is to encourage pilots to fly higher than the minimum altitude permitted by regulation when flying over noise-sensitive areas or near sites where a quiet setting is a recognized feature or attribute. The AC recommends voluntary measures for pilots to reduce potential interference with wildlife and to reduce complaints related to low-flying aircraft. These voluntary measures include (1) avoid noise-sensitive areas when possible, (2) fly at 2,000 feet AGL over noise-sensitive areas, and (3) climb upon departure and descend upon arrival, when at the takeoff and landing site, to minimize low altitude flight near noise-sensitive areas. The AC does not apply where it would conflict with FARs, air traffic control clearances or instructions, or safety.

A small body of research exists on the physical and behavioral responses of animals to aircraft and helicopters; however, little research is specific to the effects of helicopter operations on wildlife. A literature review documented in the article "Chop Chop – The Impacts of Helicopter Recreation on Wildlife" [IV-15, IV-16] indicates that "flight altitude, noise output, speed, and approach pattern are the most important factors in determining an animal's reaction to an overflight". Minimum horizontal and vertical clearance recommendations in the literature vary by species, and even vary within an individual species:

- 1,500-foot to 6,560-foot (2-kilometer) clearance above ground level to completely avoid harassment of wildlife [IV-15, IV-16, IV-17, IV-18, IV-19]
- 1,320-foot (402-meter, 0.25-mile) clearance from eagles' nests [IV-15, IV-16, IV-20]
- 330-foot to 984-foot (100-meter to 300-meter) clearance from bighorn sheep habitat [IV-15, IV-16, IV-19]
- 1,476-foot (450-meter) clearance from waterbird habitat [IV-21]

Additionally, the authors of studies on helicopter noise and wildlife recommend that flight paths should be established to minimize interaction with animals, avoid sudden or surprising flight activities near wildlife, and avoid flying directly at animals [IV-15, IV-16]. Flight maneuvering should not include hovering, circling, or pursuing wildlife in any way [IV-20].

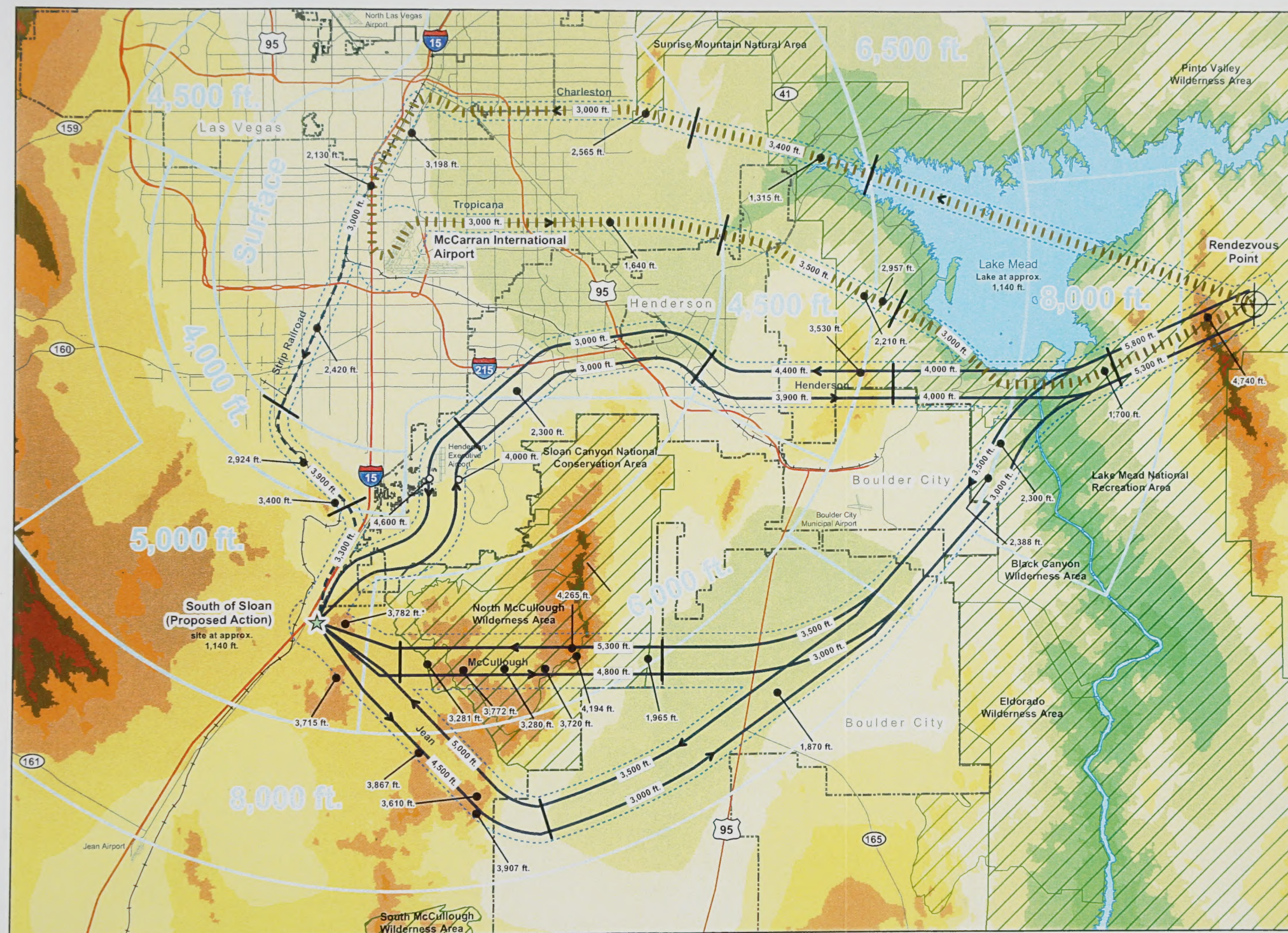
Based upon the information summarized above, the following assumptions were made for the evaluation of helicopter overflights at potential effects on species: (1) helicopters flown from 1,500 feet AGL and higher would not adversely affect wildlife; (2) helicopters flown 1,320 feet AGL or higher are not likely to affect any wildlife potentially inhabiting the region; (3) helicopters flown

between approximately 984 feet and 1,320 feet AGL are not likely to affect bighorn sheep, but could cause disturbance to raptors and other birds inhabiting the land beneath the helicopter flight corridor; (4) helicopters flown between 300 and 984 feet AGL are more likely to cause disturbance to wildlife potentially inhabiting the land beneath the helicopter flight corridor.

The altitudes at which helicopters would be flown were estimated based on discussions with the helicopter operators, standard operations and procedures for flying in the Las Vegas region, safety, clearance of terrain and obstructions, and discussions with the FAA Flight Standards District Office. Certain procedures can be assumed, such as trying to achieve a 500-foot vertical separation between the helicopter and the highest terrain or obstruction (300-foot minimum when necessary), maintaining a 500-foot vertical separation between helicopters going in opposite directions within the same corridor, and remaining outside of and at least 100 feet below controlled airspace whenever possible. Additionally, it can be assumed that helicopter pilots would aim to achieve an altitude to clear the highest obstruction, and would prefer to maintain level flight whenever possible, rather than flying down into valleys and back up over ridges. The minimum altitudes at which helicopters would most likely fly along the potential flight corridors are shown on **Exhibit IV-12**. The height above ground level at which the helicopters might be flown in a given area can be determined by subtracting the elevation of the existing terrain or obstruction from the potential flight altitude, in feet above MSL. The Class B airspace often restricts how high helicopter pilots can fly. The different altitudes for the floor, or bottom, of Class B airspace and its boundaries are indicated on Exhibit IV-12.

For chartered helicopter flights to and from the Heliport site that pass over the Sloan Canyon NCA, the Congressional legislation that includes the provision for the transfer of the land to Clark County also establishes the minimum ground clearance (or minimum height AGL), and the location of the potential flight corridor, with exceptions for safety. Such flights would be required to be within the designated 2-mile-wide flight corridor, to be flown at a minimum altitude of 500 feet AGL and 1,000 feet AGL when crossing the western and eastern border of the Sloan Canyon NCA, respectively. The altitudes indicated on Exhibit IV-12 would exceed the requirements in the Congressional legislation²⁸ for paid flights originating from or returning to the Heliport and passing over the Sloan Canyon NCA.

²⁸ Outbound flights on the McCullough corridor would likely overfly the western boundary of the Sloan Canyon NCA with a ground clearance between 1,200 and 1,500 feet AGL, and the eastern boundary of the Sloan Canyon NCA with a ground clearance between 2,300 and 2,800 feet AGL. Inbound flights on the McCullough corridor would likely overfly the eastern boundary of the Sloan Canyon NCA with a ground clearance between 2,800 and 3,300 feet AGL, and would likely overfly the western boundary of the Sloan Canyon NCA with a ground clearance between 1,700 and 2,000 feet AGL.



Legend

- ★ Proposed heliport site
- Altitude of bottom of Class B airspace
- Boundary of Class B airspace
- 5,000 ft. Helicopter flight corridor segment
- 5,000 ft. Approximate altitude at which helicopter would traverse corridor segment if flying level
- 3,200 ft. Approximate elevation of critical terrain or obstruction

Helicopter flight corridors

- McCarran International Airport existing flight corridor to or from the Grand Canyon
- Potential flight corridor to and/or from the Grand Canyon
- Potential flight corridor from the Grand Canyon (during and after sunset)
- Corridor boundary
- Direction of traffic

Terrain elevation (feet above mean sea level)

0 ft. - 499 ft.	3,000 ft. - 3,499 ft.
500 ft. - 999 ft.	3,500 ft. - 3,999 ft.
1,000 ft. - 1,499 ft.	4,000 ft. - 4,499 ft.
1,500 ft. - 1,999 ft.	4,500 ft. - 4,999 ft.
2,000 ft. - 2,499 ft.	5,000 ft. - 5,499 ft.
2,500 ft. - 2,999 ft.	

Other features

- Primary road
- Secondary/State road
- Railroad
- Jurisdictional boundary
- National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area

Flight Corridor Identification

Charleston	Existing arrival flight corridor along Charleston Boulevard
Tropicana	Existing departure flight corridor along Tropicana Avenue
Henderson	South of Sloan potential flight corridor #1
McCullough	South of Sloan potential flight corridor #2
Jean	South of Sloan potential flight corridor #3
Strip Railroad	South of Sloan potential flight corridor #4 (at sunset only)

Sources: Clark County Department of Aviation; ASRC Aerospace Corporation; Ricondo & Associates, Inc., January 2006; Las Vegas Sectional Aeronautical Chart, November 2003; Lake Mead NRA News Release, August 19, 2005.
 Prepared by: Ricondo & Associates, Inc., April 2008.

0 4 miles
 north

Approximate Helicopter Flight Altitudes and Terrain Elevations Beneath the Overflight Area

Exhibit IV-12

December 2008

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The following paragraphs provide information related to potential ground clearances for flights passing over the desert bighorn sheep, desert tortoise, bird species, and general wildlife within the Sloan Canyon NCA, the LMNRA, and undeveloped lands outside these two areas, including the Boulder City Conservation Easement area in the Eldorado Valley. Exhibit IV-12 depicts the corridor locations and potential flight altitudes and terrain elevations in the Las Vegas region.

Desert Bighorn Sheep

The Jean, Henderson, and McCullough flight corridors would pass directly over potential habitats for desert bighorn sheep.

- Sloan Canyon NCA:
 - Outbound flights on the McCullough corridor would likely overfly lower terrain with a ground clearance between 1,500 and 2,800 feet AGL, and higher terrain with a ground clearance of approximately 1,000 feet AGL.
 - Inbound flights on the McCullough corridor would likely overfly lower terrain with a ground clearance between 1,800 and 3,300 feet AGL, and higher terrain with a ground clearance of approximately 1,000 feet AGL.
- Lake Mead National Recreation Area:
 - Outbound flights on the Henderson corridor²⁹ would likely cross lower terrain with a ground clearance between 1,800 and 3,000 feet AGL, and higher terrain with a ground clearance of approximately 560 feet AGL (at the ridgeline near the Rendezvous Point).
 - Outbound flights on the McCullough corridor would likely cross lower terrain with a ground clearance between 900 and 3,000 feet, and higher terrain with a ground clearance of approximately 560 feet (when crossing the ridgeline near the Rendezvous Point).²⁷
 - Inbound flights on the Henderson corridor would likely overfly lower terrain with a ground clearance between 1,500 and 3,500 feet AGL, and higher terrain with a ground clearance of approximately 870 feet AGL (at the ridgeline northwest of Boulder City) and 1,060 feet AGL (at the ridgeline near the Rendezvous Point).
 - Inbound flights on the McCullough corridor would likely cross lower terrain with a ground clearance between 1,300 and 3,000 feet, and higher terrain with a ground clearance of approximately 1,060 feet (when crossing the ridgeline near the Rendezvous Point).²⁷
 - Flights on the inbound-only Strip Railroad and the existing inbound-only Charleston corridors would likely have a ground clearance of approximately 1,500 feet AGL at the ridgeline near the Rendezvous Point, between 2,200 and 3,500 feet AGL above Lake Mead,³⁰ and approximately 1,150 feet AGL at the western edge of the LMNRA.²⁷
 - Flights on the existing outbound-only Tropicana corridor would likely have a ground clearance between 1,000 and 2,000 feet AGL when west and south of Lake Mead, with a ground clearance between 1,300 and 2,800 feet AGL when east of Lake Mead, and with a

²⁹ Between the western edge of the LMNRA and the Rendezvous point, including over the ridgeline, the Henderson, Jean, and McCullough corridors would mostly follow existing Grand Canyon helicopter flight corridors at the existing flight altitudes.

³⁰ Based on an approximate elevation of 1,140 above MSL for Lake Mead National Recreation Area per the Lake Mead NRA News Release dated August 19, 2005, <http://www.nps.gov/lame/05-046.html>.

ground clearance of approximately 560 feet AGL when crossing the ridgeline near the Rendezvous Point.

- Helicopter overflights of the LMNRA could potentially cause the temporary displacement of wildlife in several locations, although a significant majority of the habitat areas beneath the helicopter flight corridors would not be affected. In particular, three areas within the LMNRA would experience overflights between 500 and 1,300 feet AGL, which may cause the desert bighorn sheep to be startled and move away for a short period of time. These locations are along the ridgeline near the Rendezvous Point where the existing helicopter flight corridors currently crosses, near the higher terrain northwest of Boulder City, and along the western border of the LMNRA.

Bird Species

Helicopter overflights could potentially cause the temporary displacement of some bird species in several locations.

- Sloan Canyon NCA: Three locations at the top of ridgelines beneath the McCullough flight corridor would experience overflights between 1,000 and 1,300 feet AGL, which may cause the temporary displacement of some bird species. Similar to the desert bighorn sheep, bird species would be temporarily displaced during overflights and would move away from overflowed areas for a short period of time and would likely return to areas when flights are not overhead.
- Lake Mead National Recreation Area: The McCullough and Jean flight corridors may fly over habitat for several bird species, including the American peregrine falcon and the Southwestern willow flycatcher. Those species are all residents or visitors in the LMNRA and are federally listed species.
 - Outbound flights on the McCullough corridor would likely cross lower terrain with a ground clearance between 900 and 3,000 feet, and higher terrain with a ground clearance of approximately 560 feet (when crossing the ridgeline near the Rendezvous Point).
 - Inbound flights on the McCullough corridor would likely cross lower terrain with a ground clearance between 1,300 and 3,000 feet, and higher terrain with a ground clearance of approximately 1,060 feet (when crossing the ridgeline near the Rendezvous Point).
 - Outbound flights on the Henderson corridor would likely cross lower terrain with a ground clearance between 1,800 and 3,000 feet AGL, and higher terrain with a ground clearance of approximately 560 feet AGL (at the ridgeline near the Rendezvous Point).
 - Inbound flights on the Henderson corridor would likely overfly lower terrain with a ground clearance between 1,500 and 3,500 feet AGL, and higher terrain with a ground clearance of approximately 870 feet AGL (at the ridgeline northwest of Boulder City) and 1,060 feet AGL (at the ridgeline near the Rendezvous Point).²³
- Flights on the inbound-only Strip Railroad and the existing Charleston corridors would likely have a ground clearance of approximately 1,500 feet AGL at the ridgeline near the Rendezvous Point, between 2,200 and 3,500 feet AGL above Lake Mead,³¹ and about 1,150 feet AGL at the western edge of the LMNRA. For these inbound-only corridors, the

³¹ Based on an approximate elevation of 1,140 above MSL for Lake Mead per the Lake Mead NRA News Release dated August 19, 2005, <http://www.nps.gov/lame/05-046.html>.

entire distance between the edge of the LMNRA and the Rendezvous Point would follow the existing Charleston flight corridor at the existing flight altitudes.

- Flights on the existing outbound-only Tropicana corridor would likely have a ground clearance between 1,000 and 2,000 feet AGL when west and south of Lake Mead, with a ground clearance between 1,300 and 2,800 feet AGL when east of Lake Mead, and with a ground clearance of approximately 560 feet AGL when crossing the ridgeline near the Rendezvous Point.

General Wildlife

Considering the potential flight altitudes and terrain elevations depicted on Exhibit IV-12, ground clearances for flights over undeveloped areas outside the Sloan Canyon NCA and the LMNRA are approximated below.

- Although the helicopter flight altitudes would be above 1,300 feet AGL most of the time, wildlife located in higher terrain may be disturbed by helicopters flights below 1,300 feet AGL.
- Henderson corridor between the Heliport site and Henderson Executive Airport:
 - Outbound flights would likely be flown with a ground clearance between 1,000 and 1,600 feet AGL for flights over undeveloped areas.
 - Inbound flights would likely be flown with a ground clearance between 1,000 and 2,100 feet AGL.
- McCullough corridor west of the Sloan Canyon NCA:
 - Outbound flights would likely be flown with a ground clearance between 400 and 1,500 feet AGL for flights over undeveloped areas
 - Inbound flights would likely be flown with a ground clearance between 500 and 2,000 feet AGL.
- McCullough corridor between the Sloan Canyon NCA and the LMNRA:
 - Outbound flights would likely be flown with a ground clearance between 900 and 2,800 feet AGL
 - Inbound flights would likely be flown with a ground clearance between 1,200 and 3,300 feet AGL.
- Jean corridor (between the Heliport site and the LMNRA):
 - Outbound flights would likely be flown with a ground clearance between 600 and 1,300 feet AGL
 - Inbound flights would likely be flown with a ground clearance between 1,100 and 1,600 feet AGL.
- Between the undeveloped areas outside the Sloan Canyon NCA and the LMNRA, helicopter overflights would be between 400 and 1,300 feet AGL at some point along the flight corridor.

The degree of wildlife disturbance would depend on several factors, including actual flight altitude, type of helicopter, flight frequency, habitat conditions, weather conditions that affect how sound is propagated, and the species' tolerance for disturbance. As the areas of potential disturbance are

concentrated in areas of high terrain, species that are more dependent on high terrain during their life cycle have a greater potential of being disturbed by helicopter overflights.

Helicopter overflights are not likely to disturb wildlife if a minimum of 1,500 feet vertical distance is maintained. Based on assumptions and the preceeding discussion it is noted that helicopter operations on the existing and potential helicopter flight corridors have the potential to temporarily displace wildlife in specific locations under the Proposed Action and No Action alternative. In locations near the Rendezvous Point, where the terrain would cause ground clearances to be less than 1,000 feet AGL, helicopter flight altitudes under the Proposed Action would be the same as existing helicopter flight altitudes and helicopter flight altitudes under the No Action alternative. Helicopter operations would be voluntarily confined to narrow corridors (including the two-mile wide congressionally mandated flight corridor over Sloan Canyon NCA and the North McCullough Wilderness Area) through habitat areas under both alternatives; therefore, the potential areas of disturbance would be limited. Since no hovering activities are likely to occur along existing helicopter flight corridors or would likely occur along potential helicopter flight corridors, the potential duration of any disturbances to wildlife would be brief. While helicopter overflights have the potential to disturb wildlife in specific locations, helicopter overflights are not expected to have a significant impact on wildlife under the Proposed Action or No Action alternative.

4.10.3 Conservation/Mitigation Measures

Where impacts to wildlife and plants are possible as a result of construction, operation, or maintenance of the Proposed Action, measures to reduce or eliminate potential impacts to such resources have been identified. These measures are provided in the Biological Opinion in Appendix I.

The CCDOA would encourage helicopter operators to maintain the following clearances (horizontal and vertical), when operationally feasible and safe, to minimize potential effects of helicopter activity on wildlife:

- A minimum distance of 980 feet (300 meters) AGL from desert bighorn sheep habitat. The Sloan Canyon NCA, Black Mountains, and the River Mountains ACEC contains habitat for the desert bighorn sheep.
- A minimum distance of 1,320 feet (400 meters) from bird habitat. The LMNRA contains multiple BLM-sensitive species, including the Southwestern willow flycatcher.
- A minimum distance of 1,480 feet (450 meters) from waterbird habitat. It is assumed that waterbird habitats exist at Lake Mead and the Clark County Wetlands Park.

4.11 Federally-Listed Threatened or Endangered Species

A project is considered to significantly impact biotic communities, including flora and fauna, if the project: (1) affects water resources, and correspondence received from the USFWS and the jurisdictional state agency indicates substantial damage to wildlife; (2) removes relatively small areas that are sensitive tracts occupying a strategic position in the vicinity, support rare species, or constitute a large percentage of the remaining habitat of a particular kind; or (3) results in permanent loss of habitat of plant communities or wildlife where the remaining habitat is of insufficient size and quantity to support the affected species.

4.11.1 Summary of Findings

The FAA Western-Pacific Region Airports Division notified the USFWS of the preparation of the EA. FAA has initiated formal Section 7 consultation with the USFWS. The FAA has determined the proposed project is likely to adversely affect the federally listed desert tortoise. FAA based this determination on the information in the BA that indicates the project site and the utility corridor is occupied by the desert tortoise. The Biological Opinion, as issued by the USFWS on July 1, 2008, is provided in Appendix I. The USFWS determined that the level of anticipated take would not jeopardize the continued existence of the desert tortoise.

Biological surveys of the Area of Disturbance and additional survey areas³² confirmed the presence of the federally listed (threatened) desert tortoise (*Gopherus agassizii*). Construction of the Proposed Action would lead to an incidental taking of the species. Short-term/construction and long-term impacts to the desert tortoise and potential loss of habitat would be minimized through implementation of conservation measures provided in the Biological Opinion (see Appendix I).

4.11.2 Environmental Consequences

4.11.2.1 Proposed Action

The temporary and permanent removal of habitat of the federally listed desert tortoise would result from construction of the Proposed Action. 331 acres of habitat removal would be temporary, of which 236 acres of habitat removal would be permanent under the Proposed Action. The permanent reduction of potential habitat would be limited to the construction of the Heliport and the utility corridor right-of-way within the boundary of the Area of Disturbance. Construction activities and increased vehicular traffic throughout the Area of Disturbance could result in direct mortality of individual tortoises and crushing of burrows. Therefore, completion of this project is likely to have some impact to the desert tortoise, but would not jeopardize the continued existence of the species. Further, if the desert tortoise is found onsite, relocation of individuals would be conducted in adherence to federal, State, and/or local regulations and requirements of existing permits, programs (e.g., the Multiple Species Habitat Conservation Plan), and conservation measures, as detailed in the Biological Assessment and the Biological Opinion.³³ Appendix I provides details Section 7 consultation conducted by the FAA with the USFWS during preparation of this EA, including a copy of the Biological Opinion.

4.11.2.2 No Action Alternative

Under the No Action alternative, a heliport would not be constructed. Helicopter air tour operators would continue to adhere to the Permit TE 034927-0 for the Clark County Multiple Species Habitat Conservation Plan, issued by the USFWS under Section 10 (s)1(B) of the *Endangered Species Act*.

4.11.2.3 Overflight Area

Potential adverse effects to the desert tortoise associated with helicopter flight corridors are discussed below. Helicopter air tours along the Jean and McCullough flight corridors would overfly locations with known habitat for the desert tortoise within the Sloan Canyon NCA [IV-22] and the Boulder City conservation easement area in the Eldorado Valley.

³² Biologists surveyed intervals of 100, 300, 600, 1200, and 2400 feet around the Area of Disturbance.

³³ Permit TE 034927-0 for the Clark County *Multiple Species Habitat Conservation Plan* [IV-22] was issued under Section 10 (s)1(B) of the *Endangered Species Act* and became effective on February 1, 2001.

- Sloan Canyon NCA:
 - Outbound flights on the McCullough flight corridor would likely overfly lower terrain with a ground clearance between 1,500 and 2,800 feet AGL,³⁴ and higher terrain with a ground clearance of approximately 1,000 feet AGL.
 - Inbound flights on the McCullough flight corridor would likely overfly lower terrain with a ground clearance between 1,800 and 3,300 feet AGL,³⁵ and higher terrain with a ground clearance of approximately 1,000 feet AGL.
- Boulder City Conservation Easement Area:
 - Inbound and outbound flights on the Jean and McCullough flight corridors would likely overfly lower terrain between 1,535 and 1,600 feet AGL.

As discussed in Section 4.6.2.3, the specific provision prohibits overflights of the Sloan Canyon NCA by helicopter air tours originating or concluding at the heliport site except within the two-mile corridor that is between 3 and 5 miles north of the southern boundary³⁶, and further requires that operations exceed 1,000 feet in altitude over the eastern segments and 500 feet over the western segments [I-6]. Recognizing that noise from aircraft overflights is an existing condition in the North McCullough Wilderness Area (Section 204 of the Act), Congress mandated the McCullough flight corridor to “ensure that such flights steer clear of the most sensitive and special cultural resources and minimized the impact on the majestic bighorn sheep and other wildlife that live in the McCullough Mountains.”³⁷

Further, given that the favorable habitat for the desert tortoise occurs at elevations of about 1,000 to 3,000 feet above mean sea level³⁸ [III-38] and inbound/outbound flights would be overflown at a minimum of 1,500 feet above ground level, no adverse impacts to the desert tortoise in the Sloan Canyon NCA would be expected as a result of the Proposed Action.

As mentioned in Section 4.10.2.3, about 1,500-foot to 6,560-foot (2-kilometer) clearance above ground level is needed to completely avoid harassment of wildlife. Given that Grand Canyon helicopter air tour operators would overfly the Boulder City Conservation Easement Area at altitudes between 1,535 and 1,600 feet AGL, no adverse impacts to the desert tortoise is expected.

4.11.3 Conservation/Mitigation Measures

As mentioned in Section 4.11.2.1, the Proposed Action is likely to adversely affect the desert tortoise, but would not jeopardize the continued existence of the species. Mitigation measures are required per consultation with the USFWS. Measures to minimize or eliminate potential effects to the desert tortoise where potential impacts are possible as a result of construction, operation, or

³⁴ Outbound flights on the McCullough corridor would likely overfly the western boundary of the Sloan Canyon NCA with a ground clearance between 1,200 and 1,500 feet AGL, and the eastern boundary with a ground clearance between 2,300 and 2,800 feet AGL. These ground clearances exceed legislated minimums for flights to and from the Heliport site that overfly the Sloan Canyon NCA.

³⁵ Inbound flights on the McCullough corridor would likely overfly the eastern boundary of the Sloan Canyon NCA with a ground clearance between 2,800 and 3,300 feet AGL, and the western boundary of the Sloan Canyon NCA with a ground clearance between 1,700 and 2,000 feet AGL. These ground clearances exceed legislated minimums for flights to and from the Heliport site that overfly the Sloan Canyon NCA.

³⁶ Exhibit I-1 shows the congressionally prescribed corridor over the Sloan Canyon NCA and the North McCullough Wilderness Area.

³⁷ Cong. Rec. s1540-41

³⁸ For reference, it is noted the heliport site ranges from 2,960 to 3,360 feet above mean sea level (MSL) [III-38].

maintenance of the Proposed Action are provided in the Biological Opinion (see Appendix I). The following is the list of conservation measures, as detailed in the Biological Opinion.

- The FAA, BLM, other jurisdictional federal agencies, and CCDOA shall implement the following measures to minimize injury or mortality of desert tortoises due to surface-disturbing activities, operation of project vehicles or equipment, and capture and handling of tortoises to move them out of harm's way:
 - An authorized desert tortoise biologist shall be hired for the project. In accordance with Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise (Service 1992), an authorized desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the USFWS. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which should include a minimum of 60 days field experience. All tortoise biologists shall comply with the USFWS-approved handling protocol (Desert Tortoise Council 1994, revised 1999). In addition, the biologist shall have the ability to recognize and accurately record survey results and must be familiar with the terms and conditions of the biological opinion. Those seeking to be an authorized biologist for the project shall complete the Qualifications Form and submit it to the USFWS for review and approval as appropriate. Allow 30 days for USFWS review and response.
 - Prior to initiation of construction, an authorized biologist or authorized monitor shall present a desert tortoise awareness program to all personnel who will be onsite, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will contain information concerning the biology and distribution of the desert tortoise and other sensitive species, their legal status and occurrence in the project area; the definition of "take" and associated penalties; the terms and conditions of this biological opinion; the means by which employees can help facilitate this process; responsibilities of workers, monitors, biologists, and supervisors; hazardous substance spill prevention and containment measures; and reporting procedures to be implemented in case of desert tortoise encounters or non-compliance with this biological opinion. All informed persons shall sign a statement indicating that they have completed the education program and understand fully its provisions.
 - A temporary desert tortoise-proof fence shall be constructed at the perimeter of all construction-sites associated with the heliport facility, including access roads, tank area, staging areas, and areas to be graded. All surface-disturbing activities associated with construction of the heliport facility shall occur inside this fence. If fence construction occurs during times of higher tortoise activity (approximately March 1 through October 31), an authorized tortoise biologist shall be onsite during construction of the fence to ensure that no tortoises are harmed. If the fence is constructed during times of low tortoise activity (approximately November 1 through the end of February), an authorized biologist shall thoroughly examine the proposed fence line and burrows for the presence of tortoises and eggs no more than three days before construction commences. Fence construction shall follow the USFWS's recommended specifications for desert tortoise exclusion fencing (Enclosure B). When construction is complete, the temporary fencing will be removed and a permanent desert tortoise-proof fence shall be constructed around the operations area (the heliport on the outside of the surrounding access road and airfield fence, around the tank site, and along both sides of the access road to the tank site. Tortoise-proof fence design would consist of 1-inch by 2-inch mesh welded wire, of

which 12 inches is buried and 24 inches extends above-ground (see Enclosure B for specifications).

- Cattle guards or tortoise-proof gates designed to prevent desert tortoises from entering the fenced heliport facility shall be installed at appropriate access points.
- Tortoise-proof fences shall be monitored at least quarterly and as soon as possible following precipitation. Maintenance shall include regular removal of trash and sediment accumulation, repair of any damage, and restoration of zero clearance between the ground and the bottom of the fence.
- An authorized tortoise biologist shall conduct desert tortoise clearance surveys at construction-sites (including tortoise-proof fence construction-sites), staging areas, and access routes prior to the start of construction. No more than 24 hours prior to commencement of surface-disturbing project activities, the project area would be surveyed for desert tortoise using survey techniques that provide 100 percent coverage. Two complete passes shall be conducted. If a desert tortoise is located on the second survey, a third survey will be required. All desert tortoise burrows, and other species' burrows that may be used by tortoises, shall be examined to determine whether the burrow is occupied by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed.
- Tortoises and tortoise eggs found during fence construction, clearance surveys, or construction activities shall be removed from the project area. An authorized desert tortoise biologist shall relocate tortoises and eggs to appropriate locations east and/or south of the project site on BLM-administered land. If a suitable location is not available, the authorized desert tortoise biologist shall contact the USFWS at 702-515-5230 for further instructions on placement of tortoises.
- Should a desert tortoise or eggs be encountered during construction, all construction activities in the area shall stop until the authorized desert tortoise biologist removes the eggs or tortoise from the construction-site.
- Desert tortoises that are located above ground and need to be moved from the construction-site shall be placed in the shade of a shrub. All desert tortoises removed from burrows shall be placed in an unoccupied burrow of approximately the same size and orientation as the one from which it was removed.
- All potential desert tortoise burrows located within the project area shall be excavated by hand by an authorized desert tortoise biologist, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. All desert tortoise handling and removal, and burrow excavations, including nests, shall be conducted by an authorized desert tortoise biologist in accordance with the USFWS-approved protocol (Desert Tortoise Council 1994, revised 1999). If the Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol shall be implemented for the project area.
- Desert tortoises shall be treated in a manner to ensure that they do not overheat, exhibit signs of overheating (e.g., gaping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises shall be kept shaded at all times until it is safe to release them. No desert tortoise shall be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95 degrees F

(35 degrees C). Ambient air temperature shall be measured in the shade, protected from the wind, at a height of 2 inches (5 centimeters) above the ground surface. No desert tortoise shall be captured if the ambient air temperature is anticipated to exceed 95 degrees F before handling and relocation can be completed. If the ambient air temperature exceeds 95 degrees F during handling or processing, desert tortoises shall be kept in shaded in an environment that does not exceed 95 degrees F, and the animals shall not be released until ambient air temperature declines to below 95 degrees F.

- The FAA, BLM, other jurisdictional federal agencies, and CCDOA shall implement the following measures to minimize predation on desert tortoises by predators drawn to the project area:
 - A litter control program shall be implemented during construction activities. Trash and food items shall be disposed of properly in predator-proof trash receptacles with resealing lids. During construction activities, trash receptacles will be emptied and waste removed from the project area daily.
- The FAA, BLM, other jurisdictional federal agencies, and CCDOA shall implement the following measures to minimize destruction or degradation of desert tortoise habitat, such as erosion, contamination, introduction of non-native invasive weeds, fragmentation of habitat, disturbance of soil, or crushing of vegetation, due to project activities.
 - Off-road travel outside construction zones shall be prohibited
 - The perimeter of all construction zones shall be fenced with desert tortoise proof fencing, and all construction activity shall occur inside fenced areas.
 - After construction of the heliport facility, if additional habitat disturbance is anticipated to occur outside the fenced area within undisturbed portions of the 229-acre parcel, an authorized desert tortoise biologist shall be onsite to ensure habitat disturbance is minimized and desert tortoises do not wander into harm's way
 - Weed monitoring would be conducted for species identified by the State of Nevada as well as for additional species not on the State of Nevada's Noxious Weed List that are known to invade desert tortoise habitat (such as red brome, *Bromus madritensis ssp. rubens*). Should such species be found during monitoring, control and eradication efforts shall be implemented following a CCDOA-prepared, BLM-approved noxious weed plan. Herbicides would not be used in areas occupied by desert tortoises.
 - Within the project area, soil erosion and storm water runoff will be controlled using BMPs as recommended by the FAA and BLM.
 - The FAA shall ensure payment by the project proponent, CCDOA, of remuneration fees to be deposited into the Desert Tortoise Public Lands Conservation Fund (account number 730-9999-2315) (section 7 account) for compensation of the loss of desert tortoise habitat as a result of the proposed project. The FAA and USFWS shall require a receipt of payment from CCDOA, prior to transfer of land from BLM to CCDOA.

The proposed project will disturb 146 acres of desert tortoise habitat presently administered by the BLM. However, the FAA and CCDOA propose to pay disturbance fees for the entire 229-acre parcel, in the event that the final project design requires disturbance of more than 146 acres. The current compensation rate for disturbance to desert tortoise habitat in the project area is \$753 per acre. Each year these fees will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for

All Urban Consumers (CPI-U). Information on the CPI-U can be found on the internet at: <http://stats.bls.gov/news.release/cpi.nr0.htm>. The next rate adjustment will occur on March 1, 2009. The section 7 payments shall be accompanied by the attached Section 7 Fee Payment Form (Enclosure C), and completed by the payee. Payment would be certified check or money order payable to Clark County and delivered to:

Clark County Desert Conservation Program
c/o Dept. of Air Quality and Environmental
Clark County Government Center
500 S. Grand Central Parkway, first floor (front counter)
Las Vegas, Nevada 89106
702-445-5821

If less than 229 acres of tortoise habitat are disturbed, the FAA and CCDOA may submit a request to the USFWS for a refund of fees paid for acreage of desert tortoise habitat that was not disturbed.

- The FAA, BLM, other jurisdictional federal agencies, and CCDOA shall implement the following measures to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements in this biological opinion.
 - The CCDOA shall designate an authorized desert tortoise biologist who will be responsible for overseeing compliance with protective stipulations for the desert tortoise and coordinating with the USFWS. The authorized biologist shall have the authority to halt activities that may be in violation of the stipulations.
 - The authorized desert tortoise biologist shall submit a closeout report to the USFWS's Nevada Fish and Wildlife Office in Las Vegas, no later than three months after the project is complete documenting the following:
 - The number of tortoises taken and the form of take (e.g., captured and displaced, killed, injured, or harassed by other means);
 - An assessment of the effectiveness of the protective measures outlined as the terms and conditions in this biological opinion;
 - Information on each desert tortoise handled. Information will include the following: location (GPS), date and time of observation; whether the tortoise was handled; general health and whether it voided its bladder; location tortoise was moved from and location moved to; and unique physical characteristics of each tortoise;
 - Information on any other desert tortoise sign (including burrows, scat, shell fragments) observed in the action area and their location (GPS);
 - This closeout report will also describe if the project was implemented as described in the biological opinion or if changes to the project occurred during implementation.
 - The authorized desert tortoise biologist shall notify the USFWS of any desert tortoise death or injury due to project implementation by close of business on the following work day by calling the Las Vegas office at 702-515-5230.

The following actions should be taken for injured or dead tortoises if directed by the USFWS:

- Injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal

- Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate federal and State permits per their instructions.
- Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, etc.) for preparation as a museum specimen, then they may be buried away from the project area or cremated, upon authorization by the USFWS.
- BLM or project proponent shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises.
- Should sick or injured desert tortoises be treated by a veterinarian and survive, they may be transferred as directed by the USFWS.

4.12 Invasive, Nonnative Species

According to the BLM's *NEPA Handbook H-1970-1*, invasive, nonnative species are regulated through the *Federal Noxious Weed Act of 1974* [IV-23] and Executive Order 13112, *Invasive Species* [IV-24], which provide for the control and management of invasive, nonnative weeds that injure, or have the potential to injure, local agriculture and wildlife resources, and to interfere with the growth of useful plants. Integrated Weed Management Programs are implemented on BLM-administered land to prevent the spread of invasive nonnative species.

According to Title 30 of the Clark County Unified Development Code, Appendix C, "Plant List", Part 8, Noxious Weeds, common noxious weeds of concern in Clark County include the African rue (*Peganum harmala*), perennial pepperwood (*Lepidium latifolium*), and the salt cedar (*Tamarix spp.*), a noxious weed [IV-25]. Invasive, nonnative species typically spread in disturbed areas, such as trails and mining activities, where there is no competition from other vegetation [IV-25].

The Area of Disturbance is either highly disturbed and does not support any vegetation, or is vegetated primarily with native plant species; no noxious weeds were found on the Area of Disturbance. Documented invasive species common in the Las Vegas region include the annual grass red brome (*Bromus rubens*). This invasive species is widespread and occurs throughout much of the Mohave Desert in developed or disturbed areas. Although no noxious weeds were found on the Area of Disturbance, construction activities are likely to lead to the minor spread of red brome via construction vehicles, construction equipment, and/or construction materials.

See the Biological Opinion provided in Appendix I for measures that would be used to reduce the potential spread of invasive, nonnative species, in the event any such species are encountered during construction. The CCDOA would also prepare and adhere to a BLM approved noxious weed plan.

4.13 Floodplains and Floodways

FAA Orders 1050.1E and 5050.4B state that, if the only practicable alternative would result in a floodplain encroachment, further analysis is required. The analysis should include consideration of ways to minimize potential harm and a determination of whether or not the encroachment is significant. A significant encroachment would cause: (1) a high probability of the loss of human life; (2) substantial cost or damage, including an interruption of aircraft service or loss of a vital transportation facility; or (3) adverse impacts on natural and beneficial values of a floodplain.

As shown on Exhibit III-17, no part of the Heliport site is within a 100-year floodplain. About one-sixth of the proposed communication line from the Jean Exchange Service to the Heliport site

would be constructed within a 100-year floodplain. However, installation of the underground communication line would not result in significant encroachment of the floodplain based on the criteria described above.

No adverse impacts in terms of floodplains and floodways would be expected with the Proposed Action compared with the No Action alternative and no mitigation measures would be required.

4.14 Water Quality

According to FAA Orders 5050.4B and 1050.1E, a proposed project would potentially have significant impacts if: (1) water quality standards or permit conditions were violated or could not be satisfactorily mitigated, or (2) critical aquatic habitat sustaining endangered or threatened species would be degraded.

4.14.1 Summary of Findings

Under the Proposed Action, the construction of a (1) septic sewage system or (2) a package treatment plant at the Heliport site would be required and all treatment would be conducted on-site.

Generally, surface paving and construction of impervious surfaces reduces the surface water infiltration area. However, as discussed in Section 4.13, the Heliport site is not located within a floodplain. There are no jurisdictional waters within the Area of Disturbance. Further, construction of Heliport would incorporate stormwater controls and detention basins, as necessary, such that surrounding water quality (e.g., groundwater quality) would not be adversely impacted or would cause flooding in the vicinity.

No adverse impacts on water quality, water supply, or stormwater control are expected with the Proposed Action. All necessary precautions would be incorporated in the construction procedures to prevent any potential long-term effects of site development.

4.14.2 Environmental Consequences

4.14.2.1 Groundwater

Proposed Action

The depth of the principal aquifer near the Heliport site is unknown, as no wells have been drilled on this site; the closest drilled well is located about three miles north of the site. The construction of impervious surfaces would likely affect groundwater recharge to the shallow aquifer in a localized area. Construction activities can also affect groundwater when flows are near the surface. Roads, berms, ditches, and the weight of infrastructure have the potential to block, divert, and constrict water movement in the soil. Given the size of the site, any direct impact, such as ponding, would be localized. Alteration of groundwater flow could result in indirect impacts to habitat if water were directed toward or away from the surface, resulting in drier conditions. These effects can potentially be beneficial or adverse as more or less water is available for plants and wildlife, which, in the long-term, could change the species that make up these communities.

The construction of impervious surfaces, fuel tanks, and septic systems or package treatment facility has the potential to affect the quality of groundwater. Impervious surfaces allow for the accumulation of contaminants (e.g., oil and other hydrocarbons) that, when carried by runoff, may infiltrate into the groundwater on- or off-site. About 146 acres of the total 229 acre site were

identified as potentially disturbed during construction. Appropriate measures would be incorporated into the design and construction of the Heliport to minimize adverse effects on groundwater.

On the Heliport site, a hydrant fueling system would consist of above-ground storage tanks and underground distribution lines. Proper installation and maintenance of the system would minimize the potential for leakages from the fueling system.

No Action Alternative

Under the No Action alternative, a heliport would not be constructed and no new effects to groundwater quality would be anticipated.

4.14.2.2 Wastewater

Proposed Action

Septic tanks or a package treatment facility would provide wastewater treatment needs at the Heliport site. It is estimated that the total wastewater design flow rate for the Heliport will be about 10,290 gpd in 2017, based on the expected use by 400 County and operator employees and 828 passengers per day [II-3]. A distribution box and the connection/drain piping would be associated with each building. Earthwork-related items for wastewater treatment would include excavation for tanks and installation of special backfill around the drain piping. Proper installation and maintenance of the wastewater system would be ensured to reduce potential for leakage into the surrounding environment. No adverse wastewater impacts are anticipated as a result of the Proposed Action compared with the No Action alternative and no mitigation measures would be required.

No Action Alternative

Under the No Action alternative, although no new facilities would be constructed, wastewater generation to accommodate passengers at McCarran would be at the same or similar levels to those anticipated under the Proposed Action. No increases in wastewater generation would occur beyond what would occur as the number of Grand Canyon helicopter air tour passengers increases over time.

4.14.2.3 Stormwater and Surface Water

Proposed Action

About 45 percent of the Heliport site within the Area of Disturbance would be developed under the Proposed Action. Site development and construction of impervious surfaces (e.g., pavement) generally reduce the surface water infiltration area, which could lead to increased stormwater runoff and quicker flood peaks.

The topography of the Heliport site slopes east to west down a six percent grade with a stream channel flowing northwest across the site. Because the eastern portions of the site are steeply sloped, opportunities for higher velocity runoff would exist, which could result in an increased potential for adverse impacts related to soil erosion and pollutant transport.

Several ephemeral (i.e., temporary) channels traverse the Heliport site. These channels support little vegetation and are isolated from other waters. There are no perennial watercourses within the Heliport site and ephemeral channels do not constitute jurisdictional waters because they are isolated from downstream waters [III-38]. Several ephemeral channels also traverse the northern end of the right-of-way (from east to west) and the southern end of the right-of-way (from west to east). There

are no perennial watercourses within the right-of-way; the channels do not constitute jurisdictional waters because they are within and enclosed hydrographic basin with no outlet [III-38].

During construction, the exposure of site soils could create greater potential for mobilization of pollutants and sediments in stormwater runoff in the short-term. Construction-related effects on stormwater volume and quality would be temporary and would be minimized through adherence to federal, State, and local laws and regulations. Construction best management practices that would be implemented to minimize potential construction-related effects are provided in Section 4.20.

Measures to address and accommodate stormwater runoff in the long-term operation of the heliport would be included in the design consistent with federal, State, and local standards. No adverse impacts would be anticipated as a result of the Proposed Action compared with the No Action alternative and no mitigation measures beyond best management practices would be required.

No Action Alternative

Under the No Action alternative, a heliport would not be constructed and there would be no new impacts on water quality beyond what would occur as the number of Grand Canyon helicopter air tour passengers and operations increases over time.

4.15 Hazardous Materials, Pollution Prevention, and Solid Waste

Pursuant to FAA Orders 1050.1E and 5050.4B, statutes that control the handling and disposal of hazardous materials and waste must be considered in analyzing all proposed actions to construct and operate new aviation facilities.

Solid waste associated with a proposed aviation facility may result in significant impacts if there is a potential to exceed the capacity of available disposal facilities. Construction and operation of a proposed project would be determined to have significant impacts if: (1) no compatible waste disposal site exists; (2) the waste disposal site is located within 1.5 km or 3.0 km of the runway/lift-off area (depending on the type of aircraft operated at the heliport/airport); and (3) any waste disposal site that attracts hazardous bird movements into airspace is located within a five mile radius of a runway/lift-off area [IV-26]. Use of any site listed or potentially listed on the National Priorities List (NPL)³⁹ would result in a significant impact if hazardous materials and waste were produced or released as a result of project construction. The EPA maintains a list of national sites where releases of hazardous materials and pollutants are known to occur. Sites on the NPL are determined to pose the highest level of human and environmental threat.

4.15.1 Summary of Findings

Recognized environmental conditions⁴⁰ could be present at the south edge of the Heliport site and the associated Area of Disturbance in connection with the informal shooting ranges; however, the site is not listed on the NPL as the EPA does not consider spent gun shells as hazardous waste. A Phase I Environmental Site Assessment (ESA) [III-55] recommended environmental studies (e.g., soil

³⁹ The EPA maintains a list of national sites where releases of hazardous materials and pollutants are known to occur. Superfund sites on the NPL are determined to pose the highest level of human and environmental threat.

⁴⁰ According to the Standard E-1527-00, a recognized environmental condition is defined as “the presence or likely presence of hazardous substances as defined by CERCLA, and petroleum products on a property under conditions that indicate an existing release, a past release or a material threat of a release into the ground, groundwater or surface water” [III-49].

testing) to determine the degree of potential lead contamination. In the event that lead contamination is discovered at the site, the soil or soil contaminant would be removed in accordance with federal, State, and County regulations. No RECs were found along the utility corridors.

Given that the forecast number of passengers would be the same under the Proposed Action and the No Action alternative, the amount of waste generated would be the same under both alternatives. Further, generation of hazardous materials and waste from construction of the Proposed Action would not exceed the capacity of available waste disposal facilities. Therefore, no adverse impacts would result from solid waste and wastewater as a result of construction and operation of the Proposed Action compared with the No Action alternative and no mitigation measures would be required.

4.15.2 Environmental Consequences

4.15.2.1 Proposed Action

A Phase I ESA of the Heliport site was completed in August 2005 [IV-27] to assess the potential presence of environmental hazards. A subsequent Phase I ESA of the utility corridors (remaining Area of Disturbance) was completed in December 2007 [III-56]. Review of historical and current federal, State, and local records revealed no sites of environmental concern on the Area of Disturbance. Field reconnaissance revealed no contamination, solid waste, or sources of environmental concern, with the exception of the south edge of the Heliport site, which has been utilized as an informal shooting range and for off-road vehicle sports. Due to the lead from the spent shotgun shells, it was determined that a REC⁴¹ was likely to exist on the Heliport site. The Phase I ESA recommended further environmental studies to determine the degree of potential lead contamination. In the event that lead contamination is discovered at the site, the soil or soil contaminant would be removed in accordance with federal, State, and County regulations. A Phase I ESA of the utility corridors revealed no RECs within the Area of Disturbance.

All residential and commercially generated solid waste in Clark County is collected and disposed of by Republic Services of Southern Nevada into the Apex Regional Landfill, which is located about 38 miles northwest of the Heliport site. There would be no difference in the number of helicopter passengers accommodated under the Proposed Action and the No Action alternative. Because the generation of solid waste is directly related to the number of passengers accommodated at a facility, no increase in the amount of solid waste would be expected within the region with implementation of the Proposed Action compared to the No Action alternative.

No landfills are located within a five-mile radius of the Heliport site. Therefore, the Proposed Action is consistent with the recommended guidance in FAA AC 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports* [IV-26]. Solid waste generated from construction of the Proposed Action would be temporary and long-term impacts to local landfill facilities would be negligible compared to waste generated in the Las Vegas region as a whole.

Hazardous materials would be used within the site construction areas, with the potential for direct short-term adverse impacts on soil from spills. The most common substances that may be spilled during project construction include diesel fuel, gasoline, and lubricating oils. Preventative measures, also referred to as best management practices, would be implemented to minimize potential construction-related effects as detailed in Section 4.20.

⁴¹ See Section 3.15.1 for description of a Recognized Environmental Concern (REC).

No adverse impacts would be expected with implementation of the Proposed Action compared with the No Action alternative and no mitigation measures would be required.

4.15.2.2 No Action Alternative

Under the No Action alternative, a heliport would not be constructed and there would be no new impacts in terms of hazardous materials, pollution prevention or solid waste beyond what would occur as the number of Grand Canyon helicopter air tour passengers increases over time.

4.16 Light Emissions

According to FAA Orders 1050.1E and 5050.4B, consideration should be given to potential impacts related to light emissions or visual impacts associated with a federal action. Visual resources are discussed in Section 4.17.

Light emissions are considered significant if a proposed project would create annoyance to people or interferes with their normal activities within the airport or heliport vicinity. Light emissions associated with airports and heliports are typically related to navigational aids, obstruction clearance, and lighting required for security.

4.16.1 Summary of Findings

The Heliport site is located in an area with no adjacent residential or commercial development; light emissions related to the Proposed Action would not result in adverse impacts compared with the No Action and no mitigation measures would be required.

4.16.2 Environmental Consequences

4.16.2.1 Proposed Action

The Proposed Action includes construction of lighting for the terminal and parking facilities as well as a navigational lighting system that would contribute new light emissions to the existing environment of the Heliport site. The Heliport would be located on otherwise undeveloped land that is closely bordered by Las Vegas Boulevard South and I-15 to the west of the site. Potential sources of light emissions include [I-10]:

- heliport rotating beacon
- ground-level TLOF and FATO area perimeter lights
- TLOF area lights
- taxiway and taxiing route lighting
- lighting at the terminal facilities
- floodlights at parking lots
- security and street lighting

Light emissions from helicopter operations would either be localized to the Heliport site or would occur at sufficient altitude so as not to cause adverse impacts in the Overflight Area. Light emissions from a navigational lighting system, such as the heliport rotating beacon,⁴² would not adversely affect existing land uses or the aesthetics of the area.

⁴² Heliport rotating beacons send out a light beam out and up at an angle with three distinct colors to indicate it is a heliport facility (white, aviation yellow and green colored 175 Watt bulbs).

4.16.2.2 No Action Alternative

The west side of McCarran, where current helicopter operations are based, is surrounded by commercial development, including the Las Vegas Strip, a source of large amount of light emissions from various hotels, casinos, and other development. Major sources of light emissions at McCarran include the terminal complexes and runway lighting. Light also emanates from street lighting in the surrounding areas. Under the No Action alternative, the Heliport would not be constructed and light emissions from helicopter operations at McCarran would not change beyond what would occur as a result of increasing numbers of Grand Canyon helicopter air tour operations.

4.17 Visual Resources

As described in Section 3.16, Visual Resources, the BLM uses the Visual Resource Management (VRM) system to manage visual resources on public lands, analyze and determine visual impacts of proposed activities, and gauge the amount of disturbance of the project area before it exceeds the visual objectives of its VRM class.

VRM objectives for the Heliport site, which is classified as VRM Class III, are, “to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape” [III-59].

4.17.1 Summary of Findings

The proposed heliport would result in a visual contrast that attracts the attention of people traveling along Las Vegas Boulevard South and I-15, but would not dominate the view of the casual observer. Visual analysis indicates there would be moderate landform and vegetation contrasts with the natural landscape, created by form, line and color changes resulting from vegetation and soil disturbances associated with construction activities such as grading. There would also be structurally-related form and line contrasts, produced from the addition of terminal facilities, maintenance facilities, office space, paved roadways, paved parking areas, paved helicopter touchdown, and lift-off areas. Indirect impacts to scenic quality would result from the regular presence of vehicles and helicopters.

4.17.2 Environmental Consequences

4.17.2.1 Proposed Action

The contrast ratings were recorded on a BLM Contrast Rating Form and used to determine whether or not the level of disturbance associated with the Proposed Action would exceed the VRM objectives for the area. (See **Appendix J** for the Visual Resources Contrast Rating Forms.) The Proposed Action has the potential to moderately impact visual quality in the Area of Disturbance. Pursuant to Section 180 of Public Law 109-115 [I-6], the Secretary of the Interior was directed to convey to Clark County all right, title, and interest of the 229-acre Heliport site. The transfer of land ownership would not result in impacts to scenic quality. However, subsequent development of the proposed Heliport would result in direct and indirect impacts to scenic quality in the short and long-term. Visual analysis indicates there would be moderate landform and vegetation contrasts with the natural landscape, created by form, line and color changes resulting from vegetation and soil disturbances associated with construction activities such as grading. There would also be structurally-related form and line contrasts, produced from the addition of terminal facilities, maintenance facilities, office space, paved roadways, paved parking areas, paved helicopter

touchdown, and lift-off areas. In addition, indirect impacts to scenic quality would result from the regular presence of vehicles and helicopters.

Although portions of the Proposed Action would be visible to observers from Las Vegas Boulevard South (KOP 1) and I-15 (KOP 2), VRM Class III objectives allow a moderate degree of change to the natural landscape. **Exhibit IV-13** shows the locations of the two KOPs selected for this analysis. The proposed Heliport would result in a visual contrast that attracts the attention of people traveling along Las Vegas Boulevard South and I-15, but would not dominate the view of the casual observer. Several factors were considered in determining the degree of contrast and consistency with Class III objectives: the relationship of the proposed heliport to the surrounding landscape, the length of time the heliport would be in view, and the presence of other dominant features the landscape.

Visual contrasts resulting from the proposed Heliport would be viewed against the backdrop of a steep hillside from both KOPs. Landscape modifications set against solid backdrops are less prominent than those viewed against open backdrops such as the sky. In addition, the Heliport site would be partially screened by low rising hills to the south. Because both KOPs are along travel routes allowing high speeds (55-70 mph), potential viewers would only have brief views of the Heliport site of about one to two minutes. Given the limited viewing time, the visual contrast is of less concern than it would be from a static KOP, such as an overlook or trailhead. The proposed Heliport site is also located about eight miles away from the outer edge of Anthem and on the other side of the mountains of Sloan Canyon NCA, preventing the site from being visible by Anthem residents. Finally, the development present in the Las Vegas region is the dominant feature on the landscape from KOP 2. The converging lines of the mountain ridges, roads and fence lead the viewer's eye north toward that development and away from the proposed Heliport.

Although BLM VRM class objectives would not apply to lands once transferred, the CCDOA would abide by the Clark County Building Code in terms of construction materials and landscaping, consistent with minimizing potential visual effects associated with the facility.

4.17.2.2 No Action

Under the No Action alternative, the proposed Heliport would not be constructed and there would be no changes to the scenic quality in the Area of Disturbance.



- | | | | | | |
|--|-----------------------------|--|----------------|--|-------------------------|
| | Proposed heliport site area | | Primary road | | Railroad |
| | Key observation point | | Secondary road | | Jurisdictional boundary |
| | View direction | | | | |

Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph).
 Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit IV-13

0 3,000 feet
 north

Key Observation Points

4.18 Natural Resources and Energy Supply

According to FAA Orders 1050.1E and 5050.4B, a proposed project would have significant impacts on natural resources and energy supply if the project would: (1) substantially increase the use of natural resources that are in short supply; (2) significantly increase fuel consumption due to changes in aircraft or ground vehicle use; and, (3) substantially change stationary facilities where demand exceeds local supplies of natural resources and energy.

The effects of airport/heliport development on energy and natural resources are generally related to the amount of energy required for stationary systems, such as terminal building heating and cooling systems, airfield lighting systems, and the movement of aircraft and ground vehicles. The effects on natural resources typically relate to basic materials used for construction, such as gravel and fill dirt. For most actions, changes in energy or consumption of other natural resources would not result in adverse impacts unless demand were to exceed supply.

4.18.1 Summary of Findings

As the numbers of enplaned passengers and helicopter operations are anticipated to increase in the future under the Proposed Action or No Action alternative, implementation of the Proposed Action would not result in a substantial increase in the use of fuel as a result of the number of operations or ground trips, but the use of aircraft fuel would increase as a result of longer flight distances and the use of automotive fuel would result because of the longer distances required to transport passengers between the Heliport and the Las Vegas Strip. These increases would not be considered significant. Construction of the Heliport site would also require the use of natural resources; however, these resources are not unique or in short supply in the Las Vegas region.

The Proposed Action would not adversely impact supplies of natural gas, electricity, or fuel compared with the No Action alternative, because consumption rates would not adversely impact regional supply of natural resources and energy supply.

4.18.2 Environmental Consequences

4.18.2.1 Proposed Action

Implementation of the Proposed Action would require the use of natural resources for construction, including the use of common building materials, such as asphalt, concrete, steel, and base/sub-base materials, none of which is of a unique resource or in short supply in the Las Vegas region. Energy used during construction would primarily be limited to fossil fuels for associated equipment.

The nearest Nevada Power Company utility is located in Sloan along Las Vegas Boulevard South. Although the capacity of some existing power lines would need to be increased, the power supply source for the region would not change or be adversely affected due to implementation of the Proposed Action.

The total number of helicopter operations is expected to be the same for the Proposed Action and the No Action alternative. Grand Canyon air tour operators would also continue to use Jet-A fuel for their helicopters; only Jet-A fuel will be made available at the Heliport. However, helicopters would consume more fuel operating to and from the Heliport site and the Rendezvous Point than to and from McCarran and the Rendezvous Point, because of the longer flight distances. Increases in Jet-A fuel consumption under the Proposed Action would be negligible considering the quantity of Jet-A

fuel dispensed at McCarran. Demand for Jet-A fuel under the Proposed Action would not exceed the available supply.

Diesel fuel and gasoline would be consumed by limousines and buses and ground service equipment used on the Heliport. Fuel consumption would be higher under the Proposed Action than the No Action alternative, because the distance from the Heliport site to Caesars Palace⁴³ is about 15 miles longer than the distance from McCarran to Caesars Palace. Also, people would not have access to public transit under the Proposed Action, because the Heliport site does not have bus service and none is planned. Visitors of the Heliport are normally transported to the site via company vans, limousines, shuttle buses, or other modes of transportation provided by each operator, as provided to and from McCarran and the Las Vegas Strip. Increases in diesel and gasoline consumption under the Proposed Action would be negligible considering the quantity of fuel dispensed in the Las Vegas region. Demand for automotive diesel and gasoline fuel under the Proposed Action would not exceed the available supply.

4.18.2.2 No Action Alternative

Under the No Action alternative, a heliport would not be constructed and Grand Canyon helicopter air tours would continue to primarily operate from facilities on the west side of McCarran. There would be no change to existing helicopter facilities at McCarran under the No Action alternative. The Nevada Power Company would continue to supply electricity and the Southwest Gas Corporation would continue to supply natural gas to McCarran and surrounding areas. The capacity of existing utility companies who supply electricity and gas to McCarran is adequate to accommodate forecast levels of Grand Canyon helicopter operations and passengers under the No Action alternative.

4.19 Secondary (Induced) Impacts

FAA Orders 1050.1E and 5050.4B define secondary or induced impacts as “shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity to the extent influenced by the airport development.” Secondary impacts are generally not considered significant unless significant impacts are identified in other impact categories, especially noise, land use, or direct social impacts. Specifically, secondary or induced impacts are considered significant if a proposed project influences a substantial shift in population traffic patterns and growth, public service demands (e.g., water or power services), or business and economic activity. Typically, secondary impacts are a byproduct of impacts to other resource impact categories, such as air emissions and increased noise.

4.19.1 Summary of Findings

No adverse secondary or induced impacts are expected with the Proposed Action compared to the No Action alternative and no mitigation measures would be required.

⁴³ As discussed in Section 2.4.1, Caesars Palace, located at the intersection of Las Vegas Boulevard South and Flamingo Road, was designated as the central location on the Las Vegas Strip from which passengers are picked up to existing Grand Canyon air tour operator facilities at McCarran.

4.19.2 Environmental Consequences

4.19.2.1 Proposed Action

As discussed in Sections 4.1 and 4.4, there would be no significant changes in aircraft noise exposure and no adverse impacts to local or regional air quality as a result of implementing the Proposed Action. Implementation of the Proposed Action would address concerns related to noise from helicopter overflights along the existing flight corridors followed by Grand Canyon helicopter air tours.

As described in Section 4.2, much of the land in the vicinity of the Heliport is managed by the BLM and is outside the BLM disposal area; and land recently annexed by the City of Henderson north of the Heliport site boundary is mostly undeveloped (e.g., a GoKart facility, billboards). No major residential or commercial developments are planned at this time. Further, as the Heliport would specifically serve tourists visiting the Las Vegas region (and the Grand Canyon via helicopter air tours), no new commercial or residential development in the vicinity of the Heliport is anticipated as a result of the Proposed Action.

No substantial shifts in population movement and growth or changes in business and economic activity are anticipated as a result of developing the Heliport; no adverse secondary impacts are anticipated.

Utilities to the site would be constructed in a manner consistent with standard practices of the utility providers. However, it is not anticipated that provision of utilities to the Heliport site would result in development beyond what would already occur.

4.19.2.2 No Action Alternative

Under the No Action alternative, a heliport would not be constructed and no adverse secondary impacts would be anticipated.

4.20 Construction Impacts

In accordance with FAA Orders 5050.4B and 1050.1E, specific construction impacts that could generate adverse environmental impacts must be addressed in an EA, including: (1) noise from construction equipment on site and while delivering materials; (2) air pollutant emissions from construction equipment and materials delivery (see Section 4.4); and (3) water pollution from soil erosion and stormwater runoff (see Section 4.14). According to FAA Order 5050.4B, construction impacts are considered temporary and of lesser magnitude than long-term impacts of the operation of a proposed action.

4.20.1 Summary of Findings

Construction of the Heliport and utility corridors would be conducted in accordance with federal, State, and local laws and regulations, including FAA guidance contained in AC 150/5370-10. Construction-related effects are anticipated; however most would be temporary and could be minimized through construction best management practices (BMPs) and other preventative measures documented in Section 4.20.3. No significant construction-related effects are expected with the Proposed Action and no specific mitigation measures are required.

4.20.2 Environmental Consequences

4.20.2.1 Proposed Action

Construction of the Heliport and installation of the utilities (including power, communications, and water) would include above and below-ground drilling, boring, and/or trenching for cables, pipelines, power poles, and concrete berms, ditches, and culverts on about 331 acres of land would be temporarily used for construction of the Proposed Action.

- **Electricity:**
 - About 15,800 feet of new 3-phase main line above-ground, going below near the Heliport. The new lines would generally follow the ROW of Las Vegas Boulevard South.
 - Upgrade of about 24,200 feet of existing power lines, generally between Lake Mead Drive and Sloan
- **Communication:** About 52,000 feet of 100-pair underground telecommunication cables would connect the Heliport site to the Jean Exchange service area. The new communication lines would be constructed generally within the right-of-way of Las Vegas Boulevard South from Jean to the Heliport.
- **Water:** A water pumping station would be constructed near Sloan to pump water from a reservoir to water tank on the Heliport site; about 15,000 feet of water main from the Sloan pump station to the Heliport site. The water main would be constructed generally within the right-of-way of Las Vegas Boulevard South from the Sloan pump station to the Heliport.

Operators of construction vehicles and equipment and construction workers working nearby may be exposed to high levels of noise from various types of construction equipment. Appropriate measures according to federal, State, and local regulations would be taken to protect these operators and workers from excessive noise exposure. Areas surrounding the Heliport site are undeveloped; therefore, no residential areas would be exposed to significant levels of construction noise.

Construction activities would increase the short-term potential for impacts to wildlife within the construction area. Short-term/construction fish, wildlife, and plants and federally listed threatened and endangered species would be mitigated through implementation of conservation measures discussed in Section 4.10 and Section 4.11, respectively. Construction activities would also increase the potential for the spread of Nevada-designated exotic and/or noxious weeds outside of the Area of Disturbance. Considerations to minimize the potential spread of weeds during construction are detailed in the Biological Opinion provided in Appendix I; invasive nonnative species are also discussed in Section 4.12.

Hazardous materials would be used within the site construction areas, with the potential for direct short-term adverse impacts on soil from spills. Preventative measures, also referred to as best management practices, would be implemented to minimize potential construction-related effects as detailed in Section 4.20.3.

Site construction activities, including grading, trenching, boring, and drilling, could also increase the potential for indirect short-term adverse impacts from soil erosion, stormwater runoff, and subsequent sedimentation in those areas where construction would disturb surface soils.

Construction related impacts from wind-borne fugitive dust are discussed in Section 4.4. It is noted that air emissions from construction activities would be below *de minimis* thresholds.

4.20.2.2 No Action Alternative

Under the No Action alternative, the Heliport would not be constructed; accordingly, there would be no construction-related impacts.

4.20.3 Construction Best Management Practices

Construction BMPs would be implemented to minimize potential construction-related effects. Construction-related effects are considered temporary and can be minimized through consideration and adherence to federal, State, and local laws and regulations, including guidance in FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*. BMPs that would be implemented include:

- **Spill Prevention, Control, and Countermeasures Plan** – The potential for hazardous material spills within the construction site could be minimized through implementation of a spill prevention, control, and countermeasures plan. The plan would restrict the location of fuel and other hazardous materials storage, and would restrict the locations for construction vehicle maintenance within the construction area. The plan would also provide procedures and recommended materials to contain and clean up hazardous on-site spills, should they occur.
- **Stormwater Pollution Prevention Plan** – The potential for stormwater runoff and subsequent soil erosion and sedimentation could be minimized through implementation of a stormwater pollution prevention plan. The plan should be able to be modified, if needed, to incorporate BMPs to meet the requirements for permit coverage under the NPDES. The measures described in the plan would be designed to reduce or minimize the adverse impacts from runoff-caused soil mobilization and sedimentation.
- **Exotic/Noxious Weed Plan** – The potential spread of weeds during construction-related activities can be minimized as described in Section 4.12.
- **Wildlife Protection** – Construction activities that could adversely affect wildlife that inhabit and/or stray into the Area of Disturbance can be minimized, as described in Section 4.10.
- **Wildfire Prevention** – Measures to reduce wildfire potential during construction of the Heliport would include:
 - Restricting construction during conditions of extreme fire danger
 - Storing hazardous and flammable materials in accordance with the manufacturer's recommendations
 - Collecting and storing combustible trash in containers with lids
 - Maintaining basic fire-fighting equipment on-site
- **Dust Control Plan** – Specific procedures for the control of dust generated by construction activity are described in Section 94 of the *Air Quality Regulations* [IV-28] adopted by the Clark County Department of Air Quality and Environmental Management. Some examples of these best management practices to reduce fugitive dust from construction activity are:
 - Apply dust suppressant (water) throughout the construction site to stabilize soil
 - Establish traffic control in the construction area
 - Use tarps or other suitable enclosures on haul trucks

- Implement a site-specific dust reduction plan – required for projects of 10 acres or more

4.21 Consistency with Plans, Goals, and Policies

The Heliport site is located in unincorporated Clark County within the South County Planning Area. Construction of the Heliport and associated utility extensions would be compatible with the County's South County Planning Area land use designation for the site.

The Heliport site is located on federal land managed by the BLM; however the land would be transferred to Clark County ownership as part of the Proposed Action. Construction of the Proposed Action would be consistent with the *Southern Nevada Public Land Management Act of 1998* (SNPLMA), as amended by the *Clark County Conservation of Public Land and Natural Resources Act of 2002* [III-2]. Construction of the utilities within the proposed utility corridors would be consistent with BLM's *Las Vegas Resource Management Plan and Final Environmental Impact Statement* (Las Vegas RMP/EIS) [I-18].

As described in Section 4.11, desert tortoises found on-site during construction and long-term operation of the proposed Heliport would be removed and relocated from the area and placed with the Desert Tortoise Conservation Center; such actions would adhere to the USFWS's *Desert Tortoise (Mojave Population) Recovery Plan* and the Multiple Species Habitat Conservation Plan.

Additional surface vehicle miles traveled attributable to Heliport operations along the I-15 south corridor, as described in Section 4.3, would be negligible compared with forecast surface vehicle miles traveled in the region. Further, construction of a heliport at the Heliport site and utility extensions would conform with the Regional Transportation Commission's Regional Transportation Plan/Transportation Implementation Plan.

As discussed in Section 4.4, construction of the Heliport would conform with applicable SIPs.

There are no known conflicts between construction of the Proposed Action and the objectives of federal, State, regional, local and Tribal land use plans, policies, or controls for the study areas.

4.22 Cumulative Effects

The CEQ regulations for implementing NEPA define a cumulative effect as "the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions." The regulations further state that "cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" [IV-29]. CEQ regulations require an analysis of cumulative effects because environmental conditions are generally the result of an amalgamation of varying factors. While effects on resources resulting from single actions are considered on their own, it is also necessary to examine effects from a variety of sources that may, in combination, result in amplified effects to the surrounding environment. Because each resource category has different attributes, data used to assess cumulative effects may vary, covering different periods of time and geographical areas of study.

4.22.1 Projects Considered in Cumulative Effects Analysis

According to FAA Order 5050.4B, paragraph 26, in preparing an EA for a proposed federal action, it is necessary to consider the cumulative effects of the Proposed Action and those of subsequent

related actions. These actions are generally of three types: (1) connected actions, meaning actions that may be closely related or interdependent; (2) incremental actions, which, when viewed in conjunction with other proposed actions, may result in cumulative effects; and (3) similar actions, which, when viewed with other reasonable foreseeable or proposed agency actions, have similarities such as common timing or geography.

4.22.1.1 Temporal and Spatial Boundaries

Temporal and spatial boundaries were delineated to ascertain appropriate parameters for analysis of cumulative effects. The spatial boundary used for the identification of projects to be considered under cumulative effects is described in Section 3.17 as the area within one mile of the Heliport site or along or adjacent to the proposed utility corridors. Other notable known projects outside of this boundary, but near the Heliport site or utility corridors that could have the potential to result in cumulative effects with construction and operation of the Heliport were also identified. The three investigative boundaries discussed in Section 3.2 were used for the actual assessment of cumulative effects, as appropriate, for the various impact categories. The Overflight Area includes portions of Clark County and the LMNRA that currently experience helicopter and fixed wing aircraft overflights and that could experience helicopter overflights under the Proposed Action, as defined by the existing and potential helicopter flight corridors. The Area of Disturbance for the proposed Heliport includes land within the Heliport site property boundary and utilities to the Heliport site. As appropriate and as the information is available, the potential areas of disturbance for other projects are identified. The Proposed Action, along with past, present, and reasonably foreseeable future projects, were analyzed for cumulative impacts generally within the context of these investigative boundaries, depending on the resource category being considered.

The temporal scope for purposes of the cumulative effects analysis reflects different time periods relevant to conditions for past, current, and reasonably foreseeable future projects. The Las Vegas region has experienced significant growth in the past, and continues to experience growth, transforming the overall area from primarily rural to a more urbanized environment. Past actions are reflected in existing environmental conditions as described in Section 3.17, including actions that occurred between 1995 and 2006. Present conditions reflect actions that are occurring or will occur in 2007 and 2008. Reasonably foreseeable future actions are those actions expected to occur between 2009 and 2020.

4.22.1.2 Past Actions (1995 – 2006)

CEQ regulations state that: “The availability of data often determines how far back past impacts are examined. Although certain types of data may be available for extensive periods in the past, other data may be available only for much shorter periods. Because the data describing past conditions are usually scarce, the analysis of past effects is often qualitative.” For purposes of this analysis, conditions within the Las Vegas region are generally described qualitatively as they relate to past projects. The temporal boundary for assessment of past actions is 1995 through 2006.

Clark County encompasses nearly 8,000 square miles and five incorporated cities, including Henderson, North Las Vegas, Las Vegas, Mesquite, and Boulder City. The population of Clark County increased more than 80 percent between 1990 and 2006, from approximately 770,000 to an estimated 1.9 million. While most of this growth has been centered on Las Vegas, other areas of Clark County have also experienced population increases, particularly the City of Henderson. Most of the economic growth in recent years has resulted from expansion of the gaming and tourist industries in Las Vegas. As the population of the County has grown, housing, hotel, hospital, school,

and associated infrastructure developments have also increased. The local and regional transportation systems have also been expanded, with the construction of more roads and larger and/or reconfigured commercial and general reliever airports. As stated in Section 3.17, there has not been significant development near the proposed Heliport site, even in recent years. The most recent development was the GoKart/Sloan site along the east side of I-15 near the Sloan Interchange that was completed in approximately 1995. Interstate 15, Las Vegas Boulevard South, and the Union Pacific Railroad tracks that pass near the site have been in place for some time and their construction is not likely to have present impacts. Therefore, the period from 1995 to 2006 is considered appropriate for the consideration of cumulative effects of past actions for this EA.

4.22.1.3 Current/Present Actions (2007 – 2008)

For purposes of this cumulative effects analysis, “current” refers to projects that were initiated or will be under construction in 2007 and 2008. These projects would occur independently of the proposed Heliport. As identified, projects relevant to the Area of Disturbance are listed in Table III-13.

4.22.1.4 Reasonably Foreseeable Future Actions (2009-2020)

Based on key indicators of economic growth in the region, including gaming revenues, convention attendance, hotel/motel room demand, and construction activity, further development of infrastructure within the region is anticipated. In the future, these industries are expected to continue to generate substantial economic growth in the Las Vegas region, although some economic diversification is also expected. It is anticipated that numerous projects will be undertaken in Clark County as the County continues to grow. Development of additional infrastructure, including housing, hotels, hospitals, schools, and roads, will be required. These improvements would occur independent of the proposed Heliport. Specific projects for which development is known or anticipated to begin within the 2009 through 2020 timeframe are presented in Table III-13. Considering the recent annexation of land within the BLM disposal area by the City of Henderson and other potential projects within southern Clark County, including the construction of the supplement commercial service airport in the Ivanpah Valley, which would be completed in 2017 as currently proposed, the period from 2009 through 2020 was considered a reasonable timeframe to ensure that the potential cumulative effects of known projects are considered.

4.22.2 Analysis of Cumulative Effects

The scope identified for cumulative effects consideration can vary by resource, just as geographic study areas for different resource categories may vary. In general, those projects that are thought to affect a resource are considered, and are influenced by such factors as jurisdictional limitations, unique characteristics pertaining to particular resources, importance of the resource in a local and regional setting, and the distance that impacts within that resource can travel. It is important to note that the effects of future projects are often difficult to estimate or predict until detailed plans are developed and any requisite analyses are conducted. Therefore, only anticipated effects that are known at this time were included in this analysis.

4.22.2.1 Noise

The investigative boundary for the consideration of adverse noise impacts is the Overflight Area that includes a 1-mile buffer around the Heliport site and the potential flight corridors to and from the Rendezvous Point. As discussed in Section 4.1, there would be no significant noise effects from helicopter operations at the Heliport site or beneath the potential flight corridors. All of the projects that are currently being completed or are planned to be completed in the foreseeable future are

anticipated to produce temporary construction-related noise. Due to the distance between the location of these projects and the Heliport site and the distance from the Heliport site to the nearest noise-sensitive development, no short or long-term effects are anticipated. As none of the past, current, or reasonably foreseeable future actions are related to helicopter operations, they are not anticipated to contribute to an increase in helicopter noise or operations at the Heliport site.

Much of the Overflight Area experiences overflights from existing aircraft operations from McCarran International Airport, Henderson Executive Airport, Jean Airport, Boulder City Municipal Airport, and other aviation facilities in the region. Ambient noise levels were measured at certain locations within the Overflight Area, as described in Section 3.5.2.3. Measured noise levels included noise from aircraft overflights. As described in Section 4.1.2.3, anticipated noise exposure from helicopter operations along the potential flight corridors associated with the proposed Heliport would be less than the measured ambient noise levels. Consequently, the cumulative effects of the addition of noise from helicopters operating on the potential flight corridors would not be significant.

The CCDOA has proposed the construction of a supplemental air carrier airport in the Ivanpah Valley, about 15 miles south of the proposed Heliport site. The FAA and the BLM are joint lead agencies preparing an Environmental Impact Statement (EIS) for the proposed Southern Nevada Supplemental Airport, under the *Ivanpah Valley Airport Public Lands Transfer Act of 2000* [IV-30] and the *National Environmental Policy Act of 1969*. Although final flight corridors to and from the proposed supplemental airport have not been established, a preliminary review indicated that flight corridors would typically not overlap directly with the potential helicopter flight corridors, with the possible exception of the Jean corridor. This lack of overlap is largely due to the need to separate aircraft operations at the proposed airport from operations at McCarran International Airport and other airports in the region. Although information is not available to assess the potential cumulative noise effects from helicopter operations at the Heliport combined with operations at the proposed supplemental airport as part of this EA, the EIS will include an assessment of cumulative impacts.

Based upon available information, when the effects of the Proposed Action are combined with the effects of other past, current, or reasonably foreseeable future actions, significant cumulative noise effects are not anticipated.

4.22.2.2 Air Quality

As described in Section 3.8.2, Clark County is divided into 26 hydrographic areas. Past, present, and reasonably foreseeable future actions may result in effects on air quality. The projects listed in Section 3.17 may result in increased pollutant emissions, thereby affecting air quality. Projects that may affect air quality include the construction of improvements proposed by the Las Vegas Valley Water District, the I-15 South project between the Sloan Road and Tropicana Avenue interchanges, the proposed Southern Nevada Supplemental Airport, the proposed aggregate mining operation located east of Sloan and south of the City of Henderson, and anticipated development within land annexed to the City of Henderson north of the proposed Heliport site.

As discussed previously, portions of Clark County are currently designated as being nonattainment for three federally regulated pollutants: CO, PM₁₀, and ozone. There has been a downward trend in CO emissions in Clark County in the past ten years due to several factors, including increased federal standards for automobile emissions and implementation of control measures included in the CO SIP⁴⁴. It is expected that this trend will continue into the future. PM₁₀ emissions in Clark County

⁴⁴ The CO SIP is also developed to account for growth and construction activities in the Las Vegas region.

were static for most of the 1990s but recently there has been a downward trend in PM₁₀ emissions. It is expected that, in the future, the County will be required to limit emissions of NO_x and VOC, the precursors to ozone formation. Aviation activity is a source of NO_x. Therefore, it is assumed that, in the future, actions to reduce such emissions will be required. However, the steps that will be necessary to reduce emissions have not yet been identified.

Past actions identified on Table III-13 occurred well in the past and no further construction activities are anticipated on those sites. The GoKart/Sloan site is no longer in operation and activity at the vehicular storage and billboard site is unknown, but likely to be minimal. Construction activities related to other known projects in Clark County would be a source of CO, PM₁₀, and NO_x emissions, but construction-related emissions would be temporary. Construction of the water pipeline and Sloan 2745 Zone Reservoir to be undertaken by the LVVWD and potentially the widening of I-15, the latter of which is subject to a separate review under NEPA, would potentially overlap with the construction of water and electrical utilities associated with the Proposed Action. The construction of the Reservoir and associated pipeline and the widening of I-15 would occur regardless of whether the Proposed Action is undertaken. Construction of utilities and other infrastructure to accommodate growth within the County are accounted for in the preparation of SIPs for the various pollutants. As stated in Section 4.4, construction and operational emissions associated with the Proposed Action including the construction of the utility extensions for the Proposed Action, would not exceed established *de minimis* thresholds for criteria pollutants of concern. Emissions associated with both the mining operations and the proposed development of the supplemental commercial service airport will be considered and disclosed as part of separate ongoing environmental reviews under NEPA, which will account for construction and operational emissions associated with those facilities. The extent and timing of development within the land annexed to the City of Henderson is unknown at this time. Regardless, each of those actions will be subject to the applicable Clark County Department of Air Quality and Environmental Management regarding construction activities within the County.

Based on the information provided in the previous paragraph, along with steps that the Clark County Department of Air Quality and Environmental Management has taken through implementation of plans and enforcement of guidelines, it is not anticipated that the Proposed Action, in combination with other foreseeable projects, would result in adverse cumulative effects to regional air quality.

Because aviation activity at the proposed Heliport represents such a small amount of U.S. and global emissions, and the related uncertainties involving the assessment of such emissions regionally and globally, the incremental contribution of this proposed action cannot be adequately assessed given the current state of the science and assessment methodology.⁴⁵

4.22.2.3 Compatible Land Use

As discussed in Section 4.2, the Proposed Action would not have any significant effects on compatible land use within the Area of Disturbance or the Overflight Area investigative boundaries. All of the land exposed to DNL 65 would be confined to the Heliport site or McCarran for both future analysis years (2011 and 2017). The construction of utility corridors would not result in adverse effects on compatible land use along or adjacent to the utility corridors.

⁴⁵ NEPA Regulations, Council on Environmental Quality, 40 CFR 1502.22, *Incomplete or unavailable information*.

Based on the information provided in the earlier sections referenced above, and the foreseeable projects listed in Table III-13, construction and operation of the Heliport would have no effect on any noise sensitive land uses. The Heliport site is located outside of the BLM disposal area. Future development around the Heliport site would be limited in the future as the surrounding land is publicly managed by the BLM. Potential development may occur in the future in the West Henderson Planning Area. Because the West Henderson Planning Area was recently annexed by the City of Henderson, there are no updates to the land use plans; future land use plans prepared by the City of Henderson should reflect the Heliport site. As described in Section 4.22.2.1, although information is not available to assess the potential cumulative noise effects from helicopter operations at the Heliport combined with operations at the proposed supplemental airport in the Ivanpah Valley as part of this EA, the EIS for the proposed supplemental airport will include an assessment of cumulative impacts and the potential for compatible land use impacts. As described, it is not anticipated that aircraft flight tracks to and from the proposed airport would directly overlap with the flight corridors associated with the proposed Heliport with the possible exception of the Jean flight corridor. None of the other projects listed in Table III-13 are of a nature that would be likely to result in cumulative effects on compatible land use in conjunction with the construction and operation of the proposed Heliport.

4.22.2.4 Construction Impacts

Construction activities from past projects within and adjacent to the Area of Disturbance have occurred and no further construction related impacts would be anticipated. Several projects are scheduled for construction in the area presently or in the reasonably foreseeable future, including the LVVWD Sloan 2745 Zone Reservoir and associated water lines, the mining operation, the widening of Interstate 15, and the proposed supplemental airport in the Ivanpah Valley. With the exception of the LVVWD projects, which have received approval, these projects are in the planning or environmental evaluation stages and until final construction documents are completed, it is not possible to quantify the specific cumulative effects that may arise from construction activities. However, it is believed that, with implementation of appropriate best management practices, it is unlikely that adverse construction-related cumulative effects would result from construction of these other projects.

4.22.2.5 Department of Transportation, Section 4(f) Lands

As discussed in Section 4.6, no significant effects to DOT Section 4(f) lands are anticipated under the Proposed Action within either the Area of Disturbance or the Overflight Area. Predicted noise exposure levels resulting from helicopter operations would not exceed the FAA criterion of significance of DNL 65 either from noise at the Heliport or beneath the Overflight Area and noise levels from Grand Canyon helicopter air tours on the potential flight corridors would not otherwise be anticipated to affect the use of DOT Section 4(f) properties. Given the nature of the past and present projects considered and listed in Table III-13, no cumulative effects from those actions and the Proposed Action on DOT Section 4(f) lands would be anticipated. As described in Section 4.22.2.1, although final flight tracks to and from the proposed supplemental commercial service airport in the Ivanpah Valley have yet to be determined, an initial review determined that only the flight Jean corridor would have the potential for overlap with preliminary flight tracks to and from the proposed supplemental airport. The effects of the construction and operation of the proposed mining operation are unknown at this time; however, any such effects on DOT Section 4(f) properties would require mitigation as part of obtaining environmental approval for that project. Therefore, it is not anticipated that the effects of construction and operation of the Heliport, once

combined with the effects of past projects, current projects, or reasonably foreseeable future actions, would result in adverse cumulative effects to DOT Section 4(f) lands.

4.22.2.6 Fish, Wildlife, and Plants

Implementation of the Proposed Action would result in permanent loss of vegetation and potential wildlife habitat from grading and other construction activities associated with site and utility preparation within the Area of Disturbance. There may be some disturbance to animals in specific locations beneath the Overflight Areas, but these effects are considered to be less than significant. As stated in Section 4.10, minor impacts to wildlife and plants are anticipated on the Area of Disturbance. Potential effects could be minimized, as outlined in Section 4.10.3.

Past actions listed in Table III-13 have also resulted in the loss of vegetation and potential wildlife habitat. As described in Table III-13, the GoKart/Sloan facility occupies a 49-acre site, although the actual area of the site that is disturbed is unknown. Similarly, the vehicle storage and billboard site occupies about 4.5 acres, although the actual area of the site that is disturbed is unknown. Notwithstanding, due to the limited nature of those actions and the distance from the actual Heliport site, it is not anticipated that there would be an adverse cumulative effect on these resources from the Proposed Action, considered in combination with these past actions. Any loss of vegetation and potential wildlife habitat associated with the proposed LVVWD reservoir and associated water lines have been addressed and will be addressed as appropriate as part of that action. Three future projects – the proposed mining operation, the proposed supplemental airport in the Ivanpah Valley, and the anticipated development within land annexed by the City of Henderson – have the potential and would likely result in the permanent loss of vegetation and potential wildlife habitat, although the actual effects are unknown at this time and will be assessed and disclosed as part of ongoing or future environmental approval processes. As part of those processes, the potential for cumulative effects of those and other projects will be considered, as appropriate. However, it is anticipated that with implementation of conservation measures for the Proposed Action, as described in Section 4.10.3, and similar conservation measures that would be applied to the other future actions, there would not be significant cumulative effects in terms of permanent loss of vegetation and wildlife habitat.

Within the Overflight Area, overflights from aircraft operating at other facilities in and around Clark County already occur, as described in Section 4.22.2.1. Of the actions listed in Table III-13, only the proposed commercial service airport in the Ivanpah Valley would have the potential to introduce additional overflights over portions of the Overflight Area. The actual effects of these overflights will be addressed in the ongoing EIS for that airport. As described in Section 4.10, the potential effects of helicopter overflights on fish, wildlife, and plants associated with the Proposed Action are considered to be less than significant and the activity associated with the proposed airport would result in similar types of overflights and effects that already result from existing aircraft operations. Therefore, it is not anticipated that cumulative effects within the Overflight Area would be, considering the Proposed Action in conjunction with the construction and operation of the proposed airport.

4.22.2.7 Federally Listed Threatened and Endangered Species

According to the BA, the federally listed desert tortoise occupies the Area of Disturbance related to the proposed Heliport site and the utility corridors. Based on this information, the FAA has determined that the Proposed Action is likely to adversely affect the federally listed desert tortoise; the USFWS determined that the level of anticipated take would not jeopardize the continued existence of the desert tortoise (see the Biological Opinion, as issued by the USFWS, in Appendix I).

As growth and development in the region continues and associated recreation, and other land uses continue to rise, the available habitat for biotic resources is reduced and indirect impacts from noise, pollution, and general ecosystem alteration increase.

However, Clark County has implemented conservation measures and would continue to attempt to minimize potential effects arising from current and reasonably foreseeable future actions through various means, including desert tortoise relocation programs, the incidental take permit process, the Multiple Species Habitat Conservation Plan, and other minimization measures detailed in the Biological Opinion issued by the USFWS. In addition, developers are required to conduct site surveys to catalog species and to pay species relocation fees to the County in the event that such action is required. The Conservation Plan has applied to past projects and will continue to apply to current and reasonably foreseeable future actions. Therefore, the effects of construction of the proposed Heliport, combined with the effects of past projects, current projects, or reasonably foreseeable future actions, once minimized, are not anticipated to result in adverse cumulative effects to federally listed threatened and endangered species.

4.22.2.8 Floodplains and Floodways

As discussed in Section 4.13, the Area of Disturbance associated with the underground communication lines near the Jean Exchange would be constructed on a 100-year floodplain and would be located in the same drainage basin as the proposed supplemental air carrier airport in the Ivanpah Valley.⁴⁶ However, because the communication lines would be installed near an existing roadway and other underground utilities, no significant impacts to floodplains and floodways are anticipated to occur under the Proposed Action. None of the other past, present, or reasonably foreseeable future actions are known to have or affect floodplains. Therefore, when the effects of the Proposed Action are combined with the effects of past projects, current projects, or reasonably foreseeable future actions, no adverse cumulative effects to floodplains and floodways are anticipated.

4.22.2.9 Hazardous Materials, Pollution Prevention, and Solid Waste

As discussed in Section 4.15, a recognized environmental condition associated with informal shooting ranges could exist near the proposed Heliport site. If contamination from lead is encountered during construction, it would be removed and disposed of in accordance with applicable standards and regulations. Therefore, it is not anticipated that construction of the proposed Heliport would result in any cumulative effect in terms of hazardous materials when combined with any effects of the construction of past, present or foreseeable future actions within or adjacent to the Area of Disturbance. The operation of the Heliport would not generate hazardous materials or solid waste that would exceed the capacity of available waste disposal facilities. When the effects of construction and heliport operation are combined with the effects of past projects, current projects, or reasonably foreseeable future actions, it is unlikely that adverse cumulative effects to hazardous materials, pollution prevention, and solid waste would occur at the Heliport site.

4.22.2.10 Historic, Architectural, Archaeological, and Cultural Resources

As discussed in Section 4.7, no sites eligible for listing in the NRHP were found within the Heliport site; three eligible sites were found within the Area of Disturbance associated with the utility

⁴⁶ The proposed Southern Nevada Supplemental Airport is the subject of a separate federal EIS being prepared by both the FAA and BLM. As of February 2007, the FAA and BLM have published the Draft Purpose and Need Working Paper for the EIS. The remaining portions of the Draft EIS have not yet been completed or published.

corridor. However, given existing disturbance of one of the sites and proposed avoidance and monitoring measures for the remaining two sites, no adverse impacts to these cultural resources are expected under the Proposed Action. (See Appendix H for a copy of the Nevada SHPO determination letter.)

Past actions in Clark County and the Overflight Area have had impacts on cultural resources. The specific impacts on such resources associated with the past actions listed in Table III-13 are unknown, however it can be reasonably expected that any such impacts were considered and addressed at that time. Additional effects on cultural resources may result from other current or reasonably foreseeable future actions and have been or will be assessed as part of obtaining environmental approvals for those actions. Actions are mitigated on a project by project basis in consultation with the SHPO and it is assumed that effects of construction and operation of the Heliport combined with the effects of other past, present, and reasonably foreseeable future actions within or adjacent to the Area of Disturbance or within the Overflight Area are unlikely to result in adverse cumulative effects to historic, architectural, archaeological, and cultural resources.

4.22.2.11 Light Emissions

The Proposed Action would result in new light emissions at the Heliport site. Reasonably foreseeable future actions combined with operation of the proposed Heliport may result in increased light emissions within or adjacent to the Area of Disturbance. These projects include the proposed commercial service airport in the Ivanpah Valley and the proposed mining operation about three miles northeast of the Heliport site. Changes in light emissions may be noticeable to motorists on I-15 but are not likely to have an effect on the nearest existing residential communities. It is unlikely that the effects of construction and heliport operation combined with the effects of other past, current, or reasonably foreseeable future actions would result in adverse cumulative impacts in terms of light emissions.

4.22.2.12 Visual Resources

Development of the proposed heliport would result in direct and indirect impacts to visual resources in the long term. Reasonably foreseeable future actions in proximity to the potential heliport include the proposed Southern Nevada Supplemental Airport in the Ivanpah Valley, a proposed mining operation about three miles north of the Heliport site, and the continued land disposal and development within the Las Vegas region. The BLM disposal boundary is north and adjacent to the Heliport site. Once lands change title, BLM VRM class objectives no longer apply to those properties [IV-31]. Although BLM VRM class objectives would not apply to lands once transferred, the CCDOA would abide by the Clark County Building Code in terms of construction materials and landscaping, consistent with minimizing potential visual effects associated with the facility.

4.22.2.13 Natural Resources and Energy Supply

As discussed in Section 4.18, implementation of the Proposed Action would not result in a substantial increase in the use of Jet-A or automotive fuel (diesel and gasoline), and would not adversely affect supplies of natural gas, electricity, or fuel. Further, the Grand Canyon helicopter tour operators would continue their current practice of transporting the vast majority of passengers to and from the proposed Heliport site in high-occupancy vehicles (e.g., buses, shuttle vans, limousines). The business model of these operators is based on group transportation from the resorts in Las Vegas rather than attracting individual, independent trips. Clark County has experienced and continues to experience growth at higher rates than the national average, and the use of natural resources and dependence on energy supplies (e.g., natural gas and electricity) has increased

commensurate with that growth. Further, there is adequate supply of natural resources (e.g., gravel and sand) available in the region for the construction of the Heliport, as is evidenced by the ongoing construction of hotels, resorts and casinos in the Las Vegas region. The addition of construction and heliport operation to past, current and reasonably foreseeable future actions is not expected to have a substantial impact on natural resources or energy supply beyond that occurring as a natural result of growth. Therefore, it is unlikely that adverse cumulative effects to natural resources and energy supply would occur as a result of the Proposed Action.

4.22.2.14 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

As discussed in Section 4.3, the nearest existing residential or business development is about three miles north of the Heliport site. Acquisition or relocation of residential or business properties would not be required to construct or operate the Heliport.

No adverse impacts to minority or low-income populations are anticipated and the Proposed Action is not anticipated to have an adverse effect on children's health.

Adverse socioeconomic, environmental justice, and children's environmental health and safety risk impacts are not anticipated to arise at the Heliport site. The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations, or create an adverse effect on children's health.

It is not anticipated that the Proposed Action would result in any cumulative effects combined with past or present actions discussed in Table III-13, as those actions would also not have had significant socioeconomic impacts, adverse environmental justice impacts, or adverse effects on children's environmental health or safety. The potential for such impacts from future actions will be the subject of ongoing environmental approval processes and the potential for cumulative effects from those actions will be disclosed and addressed, as appropriate.

4.22.2.15 Water Quality

As discussed in Section 4.14, and wastewater treatment facilities would be constructed at the Heliport site.⁴⁷ Construction activities would include re-grading the existing ground surface, constructing drainage, installing pavement and buildings, and handling construction materials. While there may be direct and indirect effects to water quality under the Proposed Action, the effects would be less than significant.

In addition to the effects associated with construction and operation of the Heliport, consideration was given to the potential for cumulative effects on water quality of past, present, and reasonably foreseeable future actions within or adjacent to the Area of Disturbance. When the effects of construction and heliport operation are added to the effects of other past, current, or reasonably foreseeable future actions, it is unlikely that adverse cumulative impacts to water quality would occur on the Area of Disturbance due to the distance between the location of other projects and the Heliport and associated utility corridors.

⁴⁷ Pending finalization of wastewater treatment options.

4.22.3 Summary and Conclusions

As discussed in this section, no significant cumulative effects are anticipated in any of the resource categories. As the Las Vegas region is expected to grow, it is anticipated that additional development will take place north of the Heliport site within the BLM disposal area boundary. However, based on the information presented in this section and given the scope of this project, it is not anticipated that construction and operation of the Heliport would adversely impact any environmental resources in the Las Vegas region.

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VI. List of Preparers and Agencies and Persons Consulted

6.1 List of Preparers

Overall preparation of the Final Environmental Assessment was by the following:

6.1.1 Clark County Department of Aviation

Department of Aviation

P. O. Box 11005

Las Vegas, Nevada 89111

Pamela Adams, Principal Planner

Qualifications – Principal Planner with 25-years experience in natural resource evaluations, mainly in the Southwest USA. Significant experience in managing and preparing NEPA documents, impact analyses, public outreach, and local, state, and federal agency coordination.

Responsibilities – Overall review, management, and coordination with FAA Western-Pacific Region Airports Division, CCDOA, Clark County Board of County Commissioners, and consultant team.

Jeffery Jacquart, Airport Program Administrator

Qualifications – Over 18 years of experience in airport, environmental, and land use planning experience, with significant experience air quality analysis and planning, public relations, airspace planning, airport noise compatibility, administration of mitigation programs, land use planning, and helicopter noise impacts.

Responsibilities – Review of noise analysis and coordination with CCDOA, consultant team, and Grand Canyon helicopter air tour operators.

6.1.2 Principal Federal Government Reviewers

6.1.2.1 U.S. Department of Transportation

Federal Aviation Administration

Western-Pacific Region Airports Division

15000 Aviation Boulevard

Hawthorne, California 90250

David Kessler, AICP, Regional Environmental Protection Specialist, Airports Division, Western-Pacific Region

B.A., Physical Geography (Geology Minor), M.A. Physical Geography. 26 years experience. Principal FAA Planner/Environmental Protection Specialist responsible for detailed FAA evaluation of the Environmental Assessments and Environmental Impact Statements as well as coordination of comments from various federal and state agencies in the FAA's Western-Pacific Region. Performed the required consultations with the U.S. Fish and Wildlife Service and Nevada State Historic Preservation Officer. Project Manager for the Southern Nevada Supplemental Airport Environmental Impact Statement.

6.1.2.2 U.S. Department of Interior

Bureau of Land Management

Las Vegas Field Office

4701 North Torrey Pines

Las Vegas, Nevada 89130

Cheryl Cote, Realty Specialist, Bureau of Land Management, Las Vegas Field Office

20+ years realty experience. Extensive experience in real estate, title, and land development. Primarily oversees and issues Rights-of-Way, Recreation and Public Purposes Leases and provides

information to the public on present and future uses of public lands managed by the BLM. BLM Specialist responsible for review and coordination of the Environmental Assessment as a cooperating agency.

6.1.3 Consultants

6.1.3.1 Ricondo & Associates, Inc.

John C. Williams, Senior Vice President

Qualifications – Over 20 years of experience in airport environmental and physical planning, with significant experience in preparing and managing environmental assessments and environmental impact statements, airport noise compatibility planning projects, airport master planning projects, and airfield and airspace projects.

Responsibilities – Overall quality control, NEPA guidance, project management, management of subconsultants, purpose and need, alternatives, affected environment, and environmental consequences.

Adrian M. Jones, Director

Qualifications – 13 years of airport and environmental planning experience, with significant expertise in air quality modeling, airport noise compatibility, and airport master planning projects.

Responsibilities – Helicopter noise analysis, compatible land use, quality control of air quality and noise analysis, affected environment, and environmental consequences.

Lynne W. Madera, Managing Consultant

Qualifications – 13 years of experience in airport physical and environmental planning, with notable experience in physical planning and project management in both landside and airside planning projects. Experiences include environmental assessments, airport layout plans, architectural modifications to terminals, and project definition.

Responsibilities – Flight corridor analysis, purpose and need, alternatives, affected environment, and environmental consequences.

Audrey Y. Park, Senior Consultant

Qualifications – 6 years of airport and environmental planning experience, with specific experience in various disciplines, including compatible land use analysis and simulation and modeling.

Responsibilities – Purpose and need, alternatives, affected environment, environmental consequences, references, and documentation.

Jason M. Apt, Senior Consultant

Qualifications – 6 years of airport and environmental planning experience with experience in air quality, compatible land use analysis, and geographic information systems (GIS).

Responsibilities – Air quality analysis and generation of GIS exhibits.

6.1.3.2 Brown-Buntin Associates, Inc.

Robert Brown, President

Qualifications – 28 years of experience in community noise assessment and regulation with an emphasis on aviation noise assessment, including on-site noise measurements and computer modeling.

Responsibilities – Helicopter noise analysis.

6.1.3.3 SWCA Environmental Consultants

David Harris, NEPA Specialist/Environmental Compliance Manager

Qualifications – 11 years of experience in permitting and compliance, NEPA, GIS/GPS data.

Responsibilities – Management and quality control of SWCA deliverables.

Eric Koster, Environmental Specialist/Project Manager

Qualifications – Over 7 years of experience in wildlife monitoring and surveying, and environmental assessment and environmental impact and mitigation studies.

Responsibilities – Biological Surveys and Assessment; technical input for affected environment and environmental consequences of fish, wildlife, and plants.

Scott Whitesides, Cultural Resources Specialist

Qualifications – Over 16 years of experience in cultural resource surveys and impact assessment.

Responsibilities – Cultural resource survey lead and technical input for cultural resources affected environment and environmental consequences sections.

Brian Nicholson, Wetlands Specialist

Qualifications – Over 7 years of experience and expertise in wetland and riparian functional assessment, chemical and biological water quality monitoring, watershed management, ecological surveys and research, social data collection and analysis.

Responsibilities – Technical input for water supply environmental consequences chapter.

6.1.3.4 ASRC Aerospace Corporation

Robert Varani, Manager of Aviation Services

Qualifications – Over 16 years of aviation project experience at major airports throughout the United States and Central America.

Responsibilities – Evaluation of potential flight corridors and approach design analysis to and from heliport site.

6.1.3.5 Granite Environmental, Inc.

Jack A. Elder, Ph.D., President

Qualifications – Over 30 years environmental consulting experience. Personally prepared several hundred Phase I ESAs and supervised the preparation of several thousand more. Nevada Certified Environmental Manager EM-143.

Responsibilities – Preparation of Phase I Environmental Site Assessment (hazardous materials).

6.2 List of Agencies and Persons Consulted

The following is a list of agencies, persons, and Native American Tribes and Bands consulted during the preparation of the Final EA.

Rebecca L. Palmer
State Historic Preservation Officer
Department of Cultural Affairs
100 N. Stewart St.
Carson City, NV 89701

Jeri Krueger
Fish and Wildlife Biologist
Fish and Wildlife Service
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Holly Johnson
Environmental Planner
Southern Nevada Water Authority
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Las Vegas, NV 89119

D. Bradford Hardenbrook
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Nevada Department of Wildlife
Southern Region
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Las Vegas, NV 89108

Lewis Wallenmeyer
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Clark County Department of Air Quality &
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City of Henderson
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Henderson, NV 89009

Nova Blazej
Manager
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William K. Dickinson
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Boulder City, Nevada 89005

William J. Liebhauser
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Bureau of Reclamation
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Charles Wood, Chair
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Havasu Lake, CA 92363

Nora McDowell, Chair
Fort Mojave Indian Tribe
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Needles, CA 92363

Charles Vaughn, Chair
Hualapai Tribal Council
PO Box 179
Peach Springs, AZ 86434

Gary Tom, Chair
Kaibab Paiute Tribe
HC 65, Box 2
Fredonia, AZ 86022

Alfreda Mitre, Chair
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Las Vegas, NV 89106

Darren Daboda, Chair
Moapa Band of Paiutes
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Moapa, NV 89025

Krista Coulter
Nevada State Clearinghouse
Department of administration
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Carson City, NV 89701

Jeanine Borchardt, Chair
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Paiute Indian Tribes of Utah
440 North Paiute Drive
Cedar City, UT 84720

Phil Pikyavit, Chair
Kanosh Band
Paiute Indian Tribes of Utah
PO Box 101
Kanosh, UT 84637

Cindy Charles, Chair
Koosharem Band
Paiute Indian Tribes of Utah
440 North Paiute Drive
Cedar City, UT 84720

Glenn Rogers, Chair
Shivwits Band
Paiute Indian Tribes of Utah
370 North 400 West, #2
St. George, UT 84770

Dean Mike, Chair
Twenty-Nine Palms Band of Mission Indians
46-200 Harrison Place
Coachella, CA 92236

Daniel Eddy, Jr., Chair
Colorado River Indian Tribes
Rt 1, Box 23-B
Parker, AZ 85344

Clark County Department of Aviation

Richard Arnold, Chair
Pahrump Paiute Tribe
PO Box 3411
Pahrump, NV 89041

Lora Tom, Chair
Paiute Indian Tribe of Utah
440 N. Paiute Drive
Cedar City, UT 84720-2613

Alex Shepherd, Chair
Cedar Band
Paiute Indian Tribe of Utah
5267 West 3700 South
Cedar City, UT 84720

Appendix A. Statutes

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Attachment A-1 (Page 1 of 6)**CHAPTER 495 - CITY AND COUNTY AIRPORTS; ACQUISITION OF PROPERTY;
COMMERCIAL HELICOPTERS****ACQUISITION AND OPERATION OF AIRPORTS BY COUNTIES AND CITIES**

<u>NRS 495.010</u>	Acquisition of sites and airports.
<u>NRS 495.020</u>	Indebtedness authorized; bonds.
<u>NRS 495.030</u>	Powers concerning erection, maintenance and operation of airports.

EMERGENCY LANDING FIELDS

<u>NRS 495.035</u>	Establishment and maintenance by county.
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LEASE OF COUNTY PROPERTY

<u>NRS 495.040</u>	Lease authorized; purposes; notice and hearing.
<u>NRS 495.050</u>	Commissioner may vote on agreement or lease extending beyond his term of office.
<u>NRS 495.060</u>	Conflicting laws inapplicable.

ACQUISITION OF PROPERTY BY COMPANY FOR AIR TRANSPORTATION

<u>NRS 495.070</u>	Acquisition authorized; procedure.
<u>NRS 495.080</u>	"Person" defined.
<u>NRS 495.090</u>	Verified petition; contents.
<u>NRS 495.100</u>	Rights of defendants.
<u>NRS 495.110</u>	Hearing of petition.
<u>NRS 495.120</u>	Notice of hearing; Service; publication.
<u>NRS 495.130</u>	Appointment of commissioners; vacancies.
<u>NRS 495.140</u>	Meeting of commissioners.
<u>NRS 495.150</u>	Hearing; assessment of compensation; reports; adverse claims.
<u>NRS 495.160</u>	Motion to set aside report; new trial.
<u>NRS 495.170</u>	Confirmation of reports.
<u>NRS 495.180</u>	Record of reports; amendment of pleadings; costs.
<u>NRS 495.190</u>	Proceedings when title defective; payment into court.
<u>NRS 495.200</u>	Passage of title to corporation; public use.
<u>NRS 495.210</u>	Payment or tender of compensation.

COMMERCIAL HELICOPTERS: PERSONAL PROPERTY TAX EXEMPTION

<u>NRS 495.300</u>	"Commercial helicopter" defined. [Effective through June 30, 2007.]
<u>NRS 495.310</u>	Certain boards of county commissioners to designate preferred airport or other facility for takeoff and landing of commercial helicopters, and to recommend measures to reduce commercial helicopter noise; requirements for preferred airport or other facility. [Effective through June 30, 2007.]
<u>NRS 495.320</u>	Program to provide exemptions from personal property tax to owners of commercial helicopters who use preferred airport or other facility or comply substantially with measures recommended to reduce helicopter noise. [Effective through June 30, 2007.]

ACQUISITION AND OPERATION OF AIRPORTS BY COUNTIES AND CITIES**NRS 495.010 Acquisition of sites and airports.**

1. Any city, county, town or any municipal corporation in the State of Nevada is authorized and empowered:

(a) To acquire, by purchase, condemnation, donation, lease or otherwise, real or personal property, or to use any real property owned by it, or which it may hereafter acquire, within or without its corporate limits for a site upon which an airport or airports may be maintained and upon which any such city, county, town or municipal corporation may erect and maintain or permit the erection and maintenance of hangars, mooring masts, flying fields, and all places for flying, takeoff and landing of aircraft and the storage of the same when not in active use, together with lights, radio equipment, service shops, conveniences, appliances, works, structures and other air navigation facilities, now known or hereafter invented, of such number and character and in such places as may be necessary or convenient.

(b) To levy taxes for the purpose of raising funds to acquire lands for the purposes mentioned in this section and NRS 495.020 and 495.030, and to pay the principal and interest of any bonds issued pursuant to the provisions of this section and

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NRS 495.020 and 495.030.

2. Any lands previously acquired by any such city, county, town or any municipal corporation in the State of Nevada for park purposes may be used for any of the purposes specified in this section, it being hereby specifically declared that the purpose specified in this section shall constitute park purposes. This subsection shall not be construed to limit or confine the uses specified in this section to lands acquired for park purposes.

3. The uses and purposes specified in this section are hereby declared to be a public use and subject to the exercise of the right of eminent domain, whether such right shall have been exercised prior to or shall be exercised subsequently to January 31, 1928.

[1:11:1928; NCL § 289]

NRS 495.020 Indebtedness authorized; bonds. Any city, county, town or any municipal corporation in the State of Nevada is authorized and empowered:

1. To incur indebtedness for any of the purposes mentioned in this section and NRS 495.010 and 495.030.

2. To issue bonds for the acquisition, construction and completion of any of the purposes mentioned in NRS 495.010 in the same form and manner as debt is incurred and bonds issued for other municipal purposes, and subject to the conditions, restrictions, proceedings and rights of initiative and referendum now governing the issuance of bonds for other municipal purposes.

[2:11:1928; NCL § 290]

NRS 495.030 Powers concerning erection, maintenance and operation of airports. In connection with the erection or maintenance of any airport or airports or air navigation facilities, any city, county, town or any municipal corporation shall have the power and jurisdiction:

1. To regulate the receipt, deposit and removal, the embarkation or debarkation of passengers or property for and from such landing places or moorage as may be provided.

2. To exact and require charges, fees and tolls, together with a lien to enforce their payment.

3. To lease or assign for operation such space or area, appurtenances, appliances or other conveniences necessary or useful in connection therewith.

4. To own and operate municipal aircraft.

5. To employ pilots.

6. To provide rules and regulations covering the use of such airport and facilities and the use of other property or means of transportation within or over the airport.

7. To perform any duties necessary or convenient for the regulation of air traffic.

8. To enter into contracts or otherwise cooperate with the Federal Government or other public or private agencies.

9. To exercise such powers as may be required or convenient in the promotion of aeronautics and the furtherance of commerce and navigation by air.

[3:11:1928; NCL § 291]

EMERGENCY LANDING FIELDS

NRS 495.035 Establishment and maintenance by county.

1. The several counties of the State of Nevada are authorized:

(a) To designate, establish and maintain emergency landing fields for flying, takeoff and landing of aircraft together with necessary conveniences, appliances, works, structures, now known or hereafter invented, of such number and character and in such places as may be necessary or convenient, in the interest of promoting the public safety. Such designation shall be made by resolution spread upon the records of the proceedings of the board of county commissioners.

(b) To pay for such establishment and maintenance out of any appropriations or other moneys made available for such purposes whether by allocations from the State Airport Fund or by gift or devise.

2. The board of county commissioners of any county may authorize the use of county equipment for the purposes authorized in this section.

3. The establishment and maintenance of emergency landing fields are hereby declared to be county functions and purposes, as well as public and governmental, and are matters of public necessity.

(Added to NRS by 1965, 1077; A 1967, 38)

LEASE OF COUNTY PROPERTY

NRS 495.040 Lease authorized; purposes; notice and hearing.

1. The boards of county commissioners of the respective counties of this state may lease real and personal property of their county for use and occupancy as airports, airport facilities or airport service, to whom and upon such conditions and terms as they deem proper, for a term or terms not exceeding 99 years.

2. Before entering into any agreement for the lease of property as set forth in subsection 1, the board of county commissioners shall publish notice of its intention in a newspaper of general circulation published within the county at least once a week for 21 days or three times during a period of 10 days. If there is not a newspaper of general circulation within the county, the board shall post a notice of its intention in a public place at least once a week for 30 days. The notice must specify that a regular meeting is to be held, at which meeting any interested person may appear. No such lease or agreement may be entered into by the board until after the notice has been given and a meeting held as provided in this subsection.

[1:151:1945; 1943 NCL § 296]—(NRS A 1957, 294; 1995, 845; 2001, 821)

NRS 495.050 Commissioner may vote on agreement or lease extending beyond his term of office. Any member of any board of county commissioners in the State may vote on any agreement or indenture for the lease of real or personal property of his or her respective county as referred to in NRS 495.040, notwithstanding the fact that the term of the

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agreement may extend beyond his or her term of office.
[2:151:1945; 1943 NCL § 296.01]

NRS 495.060 Conflicting laws inapplicable. All acts and parts of acts in conflict with NRS 495.040 and 495.050 are repealed insofar as the same apply to or interfere with the provisions of NRS 495.040 and 495.050, and not in any other particular.

[3:151:1945; 1943 NCL § 296.02]—(NRS A 1975, 576)

ACQUISITION OF PROPERTY BY COMPANY FOR AIR TRANSPORTATION

NRS 495.070 Acquisition authorized; procedure. Any corporation organized for the purpose of engaging in the public transportation of passengers or property or United States mail by air, whether intrastate or interstate, and any corporation organized for the purpose of operating a private or municipal airport or air navigation facility for use in connection with the public transportation of passengers or property or United States mail by air, whether intrastate or interstate, may acquire any real property, or any right, title, interest, estate or claim therein or thereto, necessary for the purpose of establishing landing places and terminals for aircraft, air navigation facilities and aerial rights-of-way, by means of the special proceedings prescribed in NRS 495.080 to 495.210, inclusive.

[Part 1:154:1937; 1931 NCL § 294.01]

NRS 495.080 "Person" defined. In all the proceedings in relation to the sale or appropriation of real property, and ascertaining and receiving the compensation therefor for the purposes prescribed in NRS 495.070, "person" includes a municipal corporation.

[38:146:1865; B § 3463; BH § 872; C § 1009; RL § 3549; NCL § 6273]—(NRS A 1985, 521)

NRS 495.090 Verified petition; contents. The corporation shall file in the clerk's office of the district court, in the county in which the real property is situated, a petition verified according to law, stating therein:

1. The name of the corporation.
2. The date when it was incorporated.
3. That it still continues in legal existence.
4. The description by metes and bounds or by some accurate designation of the tract or tracts of land which the corporation desires to appropriate for the purposes mentioned in NRS 495.070.
5. That the tract or tracts of land are necessary for the purposes.
6. The names of the persons in possession of the tract or tracts of land, and of those claiming any right, title or interest therein, as far as the same can be ascertained by reasonable diligence.

[24:146:1865; A 1869, 90; B § 3449; BH § 858; C § 995; RL § 3535; NCL § 6259]

NRS 495.100 Rights of defendants. The persons in occupation of the tract or tracts of land, and those having any right, title or interest therein, whether named in the petition or not, shall be defendants thereto, and may appear and show cause against the same, and may appear and be heard before the commissioners provided for in this chapter, and in proceedings subsequent thereto, in the same manner as if they had appeared and answered the petition.

[25:146:1865; B § 3450; BH § 859; C § 996; RL § 3536; NCL § 6260]

NRS 495.110 Hearing of petition. The court shall, by order, appoint the time for the hearing of the petition, and the hearing may be had, and all orders in the proceedings may be made, by the court.

[26:146:1865; B § 3451; BH § 860; C § 997; RL § 3537; NCL § 6261]

NRS 495.120 Notice of hearing; Service; publication. The corporation shall cause all the occupants and owners of the tract or tracts of land, so far as the same can be ascertained by reasonable diligence, who reside in the county, to be notified personally of the pendency of the petition at least 10 days before the hearing thereof, and if any of the occupants or owners are unknown, or do not reside in the county, and have not been personally notified of the pendency of the petition, the corporation shall cause a notice stating the filing of the petition, the object thereof, the tracts of land sought to be appropriated, and the time and the place of the hearing of the petition, to be published for 4 successive weeks previous to the time of hearing the petition, in a newspaper published in the county, or if none is published in the county, then in a newspaper published nearest to the county.

[27:146:1865; B § 3452; BH § 861; C § 998; RL § 3538; NCL § 6262]

NRS 495.130 Appointment of commissioners; vacancies.

1. The defendants to the petition may appear and show cause against the petition, on or before the time for the hearing thereof, or at such other time to which the hearing may be continued.
2. Upon satisfactory proof being made that the defendants have been duly notified of the pendency of the petition, as prescribed in NRS 495.120, and upon the hearing of the allegations and proofs of the parties, if the court shall be satisfied that the lands, or any part thereof, are necessary or proper for any of the purposes mentioned in the petition, the court shall appoint three competent and disinterested persons as commissioners.
3. One of the commissioners shall be selected from among the persons, if any, named for that purpose by the corporation, and one shall be selected from among the persons, if any, named on the part of any of the defendants, to ascertain and assess the compensation to be paid to any person or persons having or holding any right, title or interest in or to each of the tracts of land, for and in consideration of the appropriation of such land to the use of the corporation.
4. If any vacancy occurs among the commissioners, by reason of any one or more of them refusing or neglecting to act, or by any other means, one or more commissioners may be appointed by the court to fill the vacancy, upon notice being given of the vacancy, as the court may direct.

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[28:146:1865; B § 3453; BH § 862; C § 999; RL § 3539; NCL § 6263]

NRS 495.140 Meeting of commissioners.

1. The court shall appoint the time and place for the first meeting of the commissioners, and the time for filing of their report, and may give such further time as may be necessary for that purpose, if they shall not then have completed their duties.

2. The commissioners, or a majority of them, shall meet at the time and place as ordered, and, before entering on their duties, shall be duly sworn to perform the duties imposed upon them honestly, faithfully and impartially. Any one of them may issue subpoenas for witnesses for either of the parties, and may administer oaths. The commissioners may adjourn from place to place and from time to time, as may be necessary for the proper discharge of their duties.

[29:146:1865; B § 3454; BH § 863; C § 1000; RL § 3540; NCL § 6264]

NRS 495.150 Hearing; assessment of compensation; reports; adverse claims.

1. The commissioners shall:

(a) Proceed to view the several tracts of land as ordered by the court.

(b) Hear the allegations and proofs of the parties.

(c) Ascertain and assess the compensations for the land sought to be appropriated, to be paid by the corporation to the person or persons having or holding any right, title or interest in or to each of the several tracts of land.

2. In ascertaining and assessing compensation, the commissioners shall take into consideration and make allowance for any benefit or advantages that in their opinion will accrue to such person or persons by reason of the construction of the landing places, terminals, air navigation facilities and aerial rights-of-way by the corporation.

3. If the corporation shall, in its petition filed in the special proceedings, offer or agree to make good and sufficient fences on the landing places, terminals, air navigation facilities, and aerial rights-of-way, or any portion thereof, at such places and times as the same may be necessary, no sum of money or price for such fences shall be included in the compensation or damages to be awarded by the commissioners; but the corporation shall not be required to construct fences on the landing places, terminals, air navigation facilities and aerial rights-of-way where the same passes through unenclosed tracts of land, nor until enclosure shall be made abutting upon the property of the corporation.

4. The commissioners shall, on or before the time or times as ordered by the court, file in the clerk's office their report, signed by them, setting forth their proceedings in the premises, and they may include all of the tracts in one report, or they may make several reports, including one or more of the tracts of land, if the court shall so order, or if they shall deem it proper.

5. In case there are adverse or conflicting claims to the compensation assessed for any tract of land, or any right, title or interest therein, thus sought to be appropriated, the parties thus asserting such claims shall present the same, by petition, to the court after the report of the commissioners shall have been filed, and the court shall proceed to hear and determine the same. In such case, the corporation may pay the amount of such compensation to the clerk of the court, to abide the order of the court in the proceeding, and the corporation shall not be liable for any of the costs caused by the adjudication of such conflicting claims.

[30:146:1865; B § 3455; BH § 864; C § 1001; RL § 3541; NCL § 6265]

NRS 495.160 Motion to set aside report; new trial. The corporation, or any of the defendants, if dissatisfied with the report, may within 20 days after the time for the filing of the report, and after 10 days' notice to the parties interested, move to set aside the report, and to have a new trial as to any tract of land, upon good cause shown therefor. The court shall set aside the report as to such tract of land, and may recommit the matter to the same or to other commissioners, who shall be ordered to proceed in like manner as those first appointed; but such matters shall not be more than twice recommitted to commissioners.

[31:146:1865; B § 3456; BH § 865; C § 1002; RL § 3542; NCL § 6266]

NRS 495.170 Confirmation of reports. Upon the expiration of 20 days after the filing of the report or reports, or at such further time as may be appointed therefor, if the motion and notice shall not have been made and given as provided in NRS 495.160, and if the proceedings of the commissioners appear to have been done correctly and properly, the court shall confirm each of the reports and certify the same thereon.

[32:146:1865; B § 3457; BH § 866; C § 1003; RL § 3543; NCL § 6267]

NRS 495.180 Record of reports; amendment of pleadings; costs.

1. Each of the reports and the certificates thereon, upon the compensation therein named being paid, shall be recorded in the recorder's office of the county by the corporation.

2. The court may make all orders as may be necessary or proper in the special proceedings provided for in this chapter, and shall cause the pleadings and proceedings to be amended whenever justice shall require it to be done, and shall direct the manner of the service of all orders and notices not specially provided for.

3. Costs of the special proceedings shall be taxed by the clerk at the rates prescribed in chapter 19 of NRS for the county in civil actions, and shall be paid by the corporation, except in the case where a defendant shall move for a new trial, and the compensation assessed by the commissioners shall not be increased more than 10 percent upon the previous assessment, in which case such defendant shall pay the costs.

[33:146:1865; B § 3458; BH § 867; C § 1004; RL § 3544; NCL § 6268]

NRS 495.190 Proceedings when title defective; payment into court. If the title attempted to be acquired by virtue of the provisions of NRS 495.080 to 495.210, inclusive, shall be found to be defective from any cause, the corporation may again institute proceedings to acquire the same, as prescribed in NRS 495.080 to 495.210, inclusive. At any stage of such new proceedings, or of any proceedings under NRS 495.080 to 495.210, inclusive, the court may, by order made in its behalf, authorize the corporation, if already in possession, to continue in the use and possession, and if not in possession, to take

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possession of, and use such premises during the pendency of, and until the final conclusion of such proceedings, and may stay all actions and proceedings against the corporation on account thereof. The corporation shall pay a sufficient sum in court, or give security, to be approved by the court, to pay the compensation in that behalf when ascertained.

[34:146:1865; B § 3459; BH § 868; C § 1005; RL § 3545; NCL § 6269]

NRS 495.200 Passage of title to corporation; public use. Upon the report of the commissioners being filed for record as provided for in NRS 495.180, and upon the payment or tender of the compensation and costs, as prescribed in NRS 495.080 to 495.210, inclusive, the real property, or the right, title or interest therein, described in the report, shall become the property of the corporation for the purpose of its incorporation, and shall be deemed to be acquired for, and appropriated to, public use.

[35:146:1865; B § 3460; BH § 869; C § 1006; RL § 3546; NCL § 6270]

NRS 495.210 Payment or tender of compensation.

1. Within 30 days after the final confirmation of the report, the corporation shall, as ordered by the court, pay or tender the sum of money ascertained and assessed by the commissioners as compensation for each tract of land described in the report.

2. The payment or tender may be made:

(a) To the person or persons owning the tract of land, or having or holding any right, title or interest therein, according to the amount or extent of the right, title or interest owned or held therein by such person or persons; or

(b) To the clerk for such persons, and the same shall be deemed and taken as a payment to such person or persons, and shall be as effectual for all purposes whatsoever as if the sum of money had been personally paid to each and all of the persons entitled thereto.

3. The court shall, at the time of the payment of the sum of money to the clerk, or at such other time or times as may be ordered, direct and order the same to be paid over to the person or persons who shall, upon satisfactory proof, appear to be entitled thereto.

[36:146:1865; B § 3461; BH § 870; C § 1007; RL § 3547; NCL § 6271] + [37:146:1865; B § 3462; BH § 871; C § 1008; RL § 3548; NCL § 6272]

COMMERCIAL HELICOPTERS: PERSONAL PROPERTY TAX EXEMPTION

NRS 495.300 "Commercial helicopter" defined. [Effective through June 30, 2007.] As used in this section and NRS 495.310 and 495.320, unless the context otherwise requires, "commercial helicopter" means a rotary-wing aircraft that is operated by a person in the course of conducting a business for which a business license is required pursuant to NRS 360.780. The term does not include a rotary-wing aircraft that is operated:

1. As an air ambulance, as that term is defined in NRS 450B.030;

2. By or in cooperation with a law enforcement agency, fire-fighting agency or other governmental agency for purposes related to the protection of public health and safety;

3. By a radio station or television station; or

4. By or in cooperation with the military or naval forces of this State or of the United States.

(Added to NRS by 2003, 2742)

NRS 495.310 Certain boards of county commissioners to designate preferred airport or other facility for takeoff and landing of commercial helicopters, and to recommend measures to reduce commercial helicopter noise; requirements for preferred airport or other facility. [Effective through June 30, 2007.]

1. The board of county commissioners of each county whose population is 400,000 or more shall:

(a) In consultation with affected local governmental entities, designate a preferred airport or other preferred facility for the takeoff and landing of commercial helicopters.

(b) In consultation with the advisory committee on aircraft noise described in NRS 244.414 or such other committee or advisory body as may be established by the county, recommend technological modifications and other measures that may be taken by the owners of commercial helicopters to reduce the noise that is emitted and generated by such helicopters.

(c) Submit to the Federal Aviation Administration suggestions that the Administration may consider for new and alternative flight paths for commercial helicopters to eliminate or minimize the flight of such helicopters over residential areas.

2. The preferred airport or other preferred facility designated pursuant to paragraph (a) of subsection 1:

(a) Must not be the largest airport that is located within the county;

(b) Must not be located within a residential area; and

(c) Must be selected, insofar as is practicable, on the basis that its location will reduce:

(1) The overall impact on the county and on the residents of the county of noise that is emitted and generated by commercial helicopters; and

(2) The risk of danger to the residents of the county related to helicopter traffic.

3. As used in this section, "residential area" means land that is:

(a) Being used primarily for one- or two-family dwellings or apartments; and

(b) Located adjacent to or near other residentially used land.

(Added to NRS by 2003, 2743)

NRS 495.320 Program to provide exemptions from personal property tax to owners of commercial helicopters who use preferred airport or other facility or comply substantially with measures recommended to reduce helicopter noise. [Effective through June 30, 2007.]

1. The board of county commissioners of each county whose population is 400,000 or more shall develop a program pursuant to which, if a commercial helicopter:

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(a) Uses the preferred airport or other preferred facility designated pursuant to paragraph (a) of subsection 1 of NRS 495.310; or

(b) Complies substantially with the technological modifications and other measures that are recommended pursuant to paragraph (b) of subsection 1 of NRS 495.310,

↳ the owner of the commercial helicopter is thereby eligible to receive an exemption from the personal property tax which would otherwise be attributable to and due for that helicopter pursuant to chapter 361 of NRS.

2. The program developed pursuant to subsection 1:

(a) Must be developed in cooperation with the county assessor of the county;

(b) Must not allow the tax exemption described in that subsection until the fiscal year beginning on July 1, 2004;

(c) Must, with respect to the portion of the program which relates to the use by commercial helicopters of the preferred airport or other preferred facility, set forth minimum thresholds, measured in number of days or by a percentage of takeoffs and landings, for the usage of the preferred airport or other preferred facility by a commercial helicopter before the owner of that helicopter is eligible to receive the tax exemption described in subsection 1;

(d) Must, if an owner of a commercial helicopter desires to receive the tax exemption for using the preferred airport or other preferred facility, as described in paragraph (a) of that subsection, require the owner to, on an annual basis:

(1) Reapply for the exemption; and

(2) Provide proof that the commercial helicopter is using the preferred airport or other preferred facility in accordance with the thresholds established pursuant to paragraph (c); and

(e) Must, if an owner of a commercial helicopter desires to receive the tax exemption for complying substantially with the technological modifications and other measures, as described in paragraph (b) of that subsection, require the owner to, on an annual basis:

(1) Reapply for the exemption; and

(2) Provide proof of substantial compliance with the technological modifications and other measures that are recommended pursuant to paragraph (b) of subsection 1 of NRS 495.310.

(Added to NRS by 2003, 2743)

PUBLIC LAW 109-115—NOV. 30, 2005

119 STAT. 2429

to as the Federal Tort Claims Act) and any other Federal tort liability statute shall not apply to an employee who is assigned to a contractor under subsection (a).

SEC. 180. (a) In this section:

(1) The term "Conservation Area" means the Sloan Canyon National Conservation Area established by section 604(a) of the Clark County Conservation of Public Land and Natural Resources Act of 2002 (116 Stat. 2010).

(2) The term "County" means Clark County, Nevada.

(3)(A) The term "helicopter tour" means a commercial helicopter tour operated for profit.

(B) The term "helicopter tour" does not include a helicopter tour that is carried out to assist a Federal, State, or local agency.

(4) The term "Secretary" means the Secretary of the Interior.

(5) The term "Wilderness" means the North McCullough Mountains Wilderness established by section 202(a)(13) of the Clark County Conservation of Public Land and Natural Resources Act of 2002 (116 Stat. 2000).

(b) As soon as practicable after the date of enactment of this Act, the Secretary shall convey to the County, subject to valid existing rights, for no consideration, all right, title, and interest of the United States in and to the parcel of land described in subsection (c).

(c) The parcel of land to be conveyed under subsection (b) is the parcel of approximately 229 acres of land depicted as tract A on the map entitled "Clark County Public Heliport Facility" and dated May 3, 2004.

(d)(1) The parcel of land conveyed under subsection (b)—

(A) shall be used by the County for the operation of a heliport facility under the conditions stated in paragraphs (2), (3), and (4); and

(B) shall not be disposed of by the County.

(2)(A) Any operator of a helicopter tour originating from or concluding at the parcel of land described in subsection (c) shall pay to the Clark County Department of Aviation a \$3 conservation fee for each passenger on the helicopter tour if any portion of the helicopter tour occurs over the Conservation Area.

(B)(i) Not earlier than 10 years after the date of enactment of this Act and every 10 years thereafter, the Secretary shall conduct a review to determine whether to raise the amount of the conservation fee.

(ii) After conducting a review under clause (i) and providing an opportunity for public comment, the Secretary may raise the amount of the conservation fee in an amount determined to be appropriate by the Secretary, but by not more than 50 percent of the amount of the conservation fee in effect on the day before the date of the increase.

(3)(A) The amounts collected under paragraph (2) shall be deposited in a special account in the Treasury of the United States.

(B) Of the amounts deposited under subparagraph (A)—

(i) $\frac{2}{3}$ of the amounts shall be available to the Secretary, without further appropriation, for the management of cultural, wildlife, and wilderness resources on public land in the State of Nevada; and

Deadlines.
Fees.

Public comment.

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(ii) $\frac{1}{3}$ of the amounts shall be available to the Director of the Bureau of Land Management, without further appropriation, for the conduct of Bureau of Land Management operations for the Conservation Area and the Red Rock Canyon National Conservation Area.

(4)(A) Except for safety reasons, any helicopter tour originating or concluding at the parcel of land described in subsection (c) that flies over the Conservation Area shall not fly—

(i) over any area in the Conservation Area except the area that is between 3 and 5 miles north of the latitude of the southernmost boundary of the Conservation Area;

(ii) lower than 1,000 feet over the eastern segments of the boundary of the Conservation Area; or

(iii) lower than 500 feet over the western segments of the boundary of the Conservation Area.

Regulations.

(B) The Administrator of the Federal Aviation Administration shall establish a special flight rules area and any operating procedures that the Administrator determines to be necessary to implement subparagraph (A).

(5) If the County ceases to use any of the land described in subsection (c) for the purpose described in paragraph (1)(A) and under the conditions stated in paragraph (2)—

(A) title to the parcel shall revert to the United States, at the option of the United States; and

(B) the County shall be responsible for any reclamation necessary to revert the parcel to the United States.

(e) The Secretary shall require, as a condition of the conveyance under subsection (b), that the County pay the administrative costs of the conveyance, including survey costs and any other costs associated with the transfer of title.

SEC. 181. The first sentence of section 29(c) of the International Air Transportation Competition Act of 1979 (Public Law 96-192; 94 Stat. 48) is amended by inserting “Missouri,” before “and Texas”.

SEC. 182. Notwithstanding any other provision of law, none of the funds provided in or limited by this Act may be obligated or expended to provide a budget justification for fiscal year 2007 concurrently with the President’s annual budget submission to Congress under section 1105(a) of title 31, United States Code, to any congressional committee other than the House and Senate Committees on Appropriations prior to May 31, 2006.

SEC. 183. Notwithstanding any other provision of law, if any funds provided in or limited by this Act are subject to a reprogramming action that requires notice to be provided to the House and Senate Committees on Appropriations, said reprogramming action shall be approved or denied solely by the Committees on Appropriations: *Provided*, That the Secretary may provide notice to other congressional committees of the action of the Committees on Appropriations on such reprogramming but not sooner than 30 days following the date on which the reprogramming action has been approved or denied by the House and Senate Committees on Appropriations.

SEC. 184. Notwithstanding any other provision of law, the projects numbered 5094 and 5096 in the table contained in section 1702 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; 119 Stat. 1144) shall be subject to section 120(c) of title 23, United States Code.

Appendix B. Planning Timeline for a Southern Nevada Regional Heliport

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Appendix B. Planning Timeline for a Southern Nevada Regional Heliport

B.1 Introduction

The Clark County Department of Aviation (CCDOA) has led the planning process for the potential development of a non-urban heliport in the southern region of the State of Nevada. The development of a Southern Nevada Regional Heliport (the Heliport) is intended to support the tourism industry in the region by meeting demand for an existing tourist service – air tours by helicopter of the Grand Canyon – in a manner that minimizes the adverse effects of helicopter overflights in the urban areas of the Las Vegas region and Southern Nevada. The planning process involved multiple physical and operational studies and meetings with stakeholders and the public conducted between late-2000 and late-2006. This collection of Planning Studies provides documentation of the various analyses and serves as a source of reference for the subsequent environmental review process.

The goal of the planning process was to establish the preferred location, size, and configuration of the Heliport that would meet multiple objectives: (a) accommodate the forecast Grand Canyon helicopter air tour demand, (b) promote the voluntary relocation of helicopter air tour activity from McCarran International Airport and other potential urban heliport facilities, and (c) allow for flight corridors that minimize overflights of residential areas. The intermediate steps of the planning process consisted of researching physical requirements and operational practices, analyzing existing and future air tour demand, considering and evaluating alternative sites and configurations, determining alternative flight corridors, and establishing initial development standards. The Heliport has been planned and will continue to be developed in coordination with the Federal Aviation Administration (FAA), the helicopter air tour operators, the Helicopter Association International, and the community.

B.2 Planning Process Timeline

1995 – Due to the increase in helicopter operations at and around McCarran International Airport, flight corridors for helicopter air tours of the Grand Canyon (departing along Tropicana, returning along the Charleston area) were formally established by the FAA through Letters of Agreement with the helicopter air tour operators. The flight corridors were developed to lessen the impact to traffic operating at McCarran International Airport and for safety concerns.

April 1997 – A rise in community concerns along the Tropicana departure flight corridor increased in response to an increase in helicopter tour flights.¹

August 1997 (and ongoing) – Through an informal Helicopter Users Forum whose participants include the tour operators, the FAA Air Traffic Control, the FAA Flight Standards District Office, and other interest parties, Clark County has and continues to work with the FAA and operators to improve compliance along preferred corridors, and, where possible and appropriate, revised the procedures to increase flight altitudes and/or reduce direct overflights of residential areas.

¹ Historical helicopter operations are not available for this timeframe; noise monitoring has been conducted annually at McCarran since 2000.

December 2000 – CCDOA completed its initial helicopter noise assessment, which included noise monitoring (conducted over a two-week period) and noise modeling of a “busy day”. Results showed that helicopter operations did not generate significant noise exposure over noise sensitive land uses, according to 14 Code of Federal Regulations (CFR) Part 150 – defined as day-night annual average sound level of 65 decibels, A-weighted (DNL 65) and higher. Noise monitoring has been conducted annually since 2000.

March/April 2001 – The CCDOA, in conjunction with Clark County Commissioner Williams, held a series of neighborhood meetings to (1) address the County and State limits of controlling/reducing helicopter noise impacts, and (2) to share the results of the helicopter noise assessment completed in 2000. The development of a non-urban heliport was identified as a potential solution, if the heliport would be utilized by air tour operators. A subsequent meeting was also held in May 2005 to provide updated information to the community.

May 2001 – The Helicopter User’s Forum considered a variety of alternative routing options, and discussed the possibility of a non-urban heliport. Although a number of other helicopter flight corridors were explored, and some tested by the operators or the Metropolitan Police Department, alternative flight corridors through the urbanized areas of the Las Vegas region were not implemented due to safety considerations (impact on fixed-wing aircraft traffic patterns), community impact concerns (transferring noise issues from one community to another), or operator refusal to use the flight corridors (increased flight time and fuel consumption demands).

May and December 2001 – The Nevada State Legislature adopted Assembly Bill 490, amending Nevada Revised Statute Chapter 244 (NRS 244) to authorize certain counties, including Clark County, to create an advisory committee on aircraft noise. The purposes of the committee created under this authority were to examine information related to the problems of aircraft noise, promote increased communication, and consult with relevant public agencies. The Clark County Board of County Commissioners (the Board) adopted an ordinance pursuant to NRS 244 that established an Advisory Committee on Helicopter Noise (ACHN), facilitated by CCDOA, through which various parties would be able to discuss, review, and, where appropriate, formulate potential solutions to helicopter noise concerns. The ordinance provided for the appointment of 10 members to the committee: seven members who represent neighborhoods directly affected by helicopter overflights, two members who represent commercial operators of helicopters, and one member who represents the Board.

The ACHN met regularly on an annual basis and discussed strategies to reduce helicopter noise over noise sensitive land uses in the Las Vegas region. In February 2007, the ACHN was disbanded because it was found that all possible legal remedies to reduce helicopter noise impacts have been pursued by Clark County, and that the relocation of the helicopter air tour operators to a non-urban heliport was the best solution to address ongoing helicopter noise in the urban environment.

March 2002 – The CCDOA pursued Congressional support to acquire 160 acres near Railroad Pass, located in Henderson, Nevada, for a non-urban heliport. The site was located near another heliport being proposed within the area by a helicopter air tour operator. Due to opposition from the City of Henderson, the public lands release request for the Railroad Pass site was

not supported by the Nevada Legislative delegation, and the pursuit of the proposed private heliport facility within the area was abandoned.

September 2002 – The ACHN passed an Action Item requesting that the Board relocate the base of tourist helicopters. This recommendation was presented to the Board in June 2003 during the ACHN's presentation of their 2002 Annual Report.

June 2003 – The Nevada State Legislature adopted Assembly Bill 355, amending Nevada Revised Statutes Chapter 495 Sections 300-320 (NRS 495) to require certain counties, including Clark County, to designate a preferred non-urban heliport site by early 2004. The statute required that the selected heliport site not be located at the largest airport in the County (e.g., McCarran International Airport) and that it not be located in a residential area. The Legislature adopted AB 355 after multiple hearings in the Assembly and Senate in April and May 2003, which focused principally on the issue of helicopter noise in Clark County.

November 2003 – The *Needs Assessment* was completed, documenting the physical and operational characteristics of commercial helicopter operators in Southern Nevada, and identified generalized facility and area requirements for a non-urban heliport that would accommodate multiple commercial helicopter operators.

December 2003 – The *Site Suitability Assessment* was completed, assessing the suitability of 13 candidate heliport sites to accommodate the heliport requirements identified in the *Needs Assessment*. One site, identified as the GoKart/Sloan site, was recommended as the most suitable for the Southern Nevada Regional Heliport.

January 2004 – The CCDOA attended a meeting with the Anthem home owners association regarding the *Site Suitability Assessment* findings and GoKart/Sloan site selection.

January 2004 – The ACHN passed an Action Item requesting that the Board designate the GoKart/Sloan site, as identified in the *Site Suitability Assessment*, as the preferred facility for the takeoff and landing of commercial helicopters serving the Grand Canyon air tour market.

January 2004 – The CCDOA hosted a public workshop regarding the *Site Suitability Assessment*, and the heliport site selection, as required by NRS 495. Over 400 public comments were received regarding the selection process.

February 2004 – The Board hosted a public hearing regarding the designation of a preferred non-urban heliport site, as required by NRS 495. Considering the completed *Needs Assessment* and *Site Suitability Assessment* studies, the written comments and public input received on the *Site Suitability Assessment* and related public workshop, and the testimony given by residents, helicopter tour operators, the ACHN, and CCDOA staff during the public hearing, the Board directed that one additional alternative site be considered and, if it were found to meet the established requirements, it would be designated as the preferred non-urban heliport site. The site was to be located about two to five miles south of the Sloan and Interstate 15 interchange, south of the Las Vegas Valley. The GoKart/Sloan site, recommended as the site suitable to support a non-urban heliport facility, as identified in the *Site Suitability Assessment*, was retained as the preferred backup site should land acquisition of the preferred site be delayed.

The site was eventually referred to as the South of Sloan site. The actual parcel was selected during a site visit that included CCDOA and three Grand Canyon helicopter air tour operators. The site appeared upon initial review to be able to accommodate development and operation of a heliport; however, use of the site was subject to confirmation of its technical suitability and transfer of ownership of the land. Technical suitability was confirmed by the evaluation of the site using the criteria established in the *Site Suitability Assessment*, as documented in the *Supplemental Site Suitability Assessment of the South of Sloan Site*.

February 2004 and November 2005 – The CCDOA pursued Congressional support to acquire a 229-acre parcel, located about two miles south of the GoKart/Sloan site, in Clark County, Nevada, for a non-urban heliport. The site was located east of Interstate 15, managed by the Department of Interior, Bureau of Land Management, and surrounded by vacant and undeveloped land. Congressional action was needed to transfer ownership of the parcel because the land was located outside an area approved for disposal.

In May 2004, Nevada's Congressional delegation assisted with land requirements by introducing draft legislation authorizing the transfer of land from federal ownership to Clark County ownership specifically for development of a heliport. Legislation was enacted on November 30, 2005,² to allow transfer of the land to Clark County as soon as practicable, and to establish ownership and operating conditions. The ownership and operating conditions include:

- The County shall not dispose of the parcel.
- The parcel shall be used for operation of a heliport facility. If the County ceases to use the site for heliport operations, the parcel shall revert to federal ownership.
- The operator of any for-profit helicopter tour originating from or terminating at the site that crosses the Sloan Canyon National Conservation Area (NCA) (a) shall pay a conservation fee, (b) except for safety reasons, shall not fly outside a specific 2-mile path when inside the boundaries of the Sloan Canyon NCA, and (c) except for safety reasons, shall not fly below specific heights above the ground when crossing the boundaries of the Sloan Canyon NCA.

July 2004 – The CCDOA hosted an Open House regarding the Board site designation in the Seven Hills master planned community, located in Henderson, Nevada.

Summer 2005 – CCDOA completed a *Helicopter Fly Safely and Quietly* brochure.

December 2006 – The Project Definition, Development, and Operational Manual (PDDOM) were completed. The first part of the PDDOM, the Project Definition Manual, was developed to:

- Establish Department of Aviation goals for development and operation of the Heliport to guide the development of updated facility requirements, conceptual site design, subsequent architectural/engineering design, and eventual construction stages.
- Update the facility requirements for the Heliport based on current and projected operator needs, in-progress forecasts of operational activity, and appropriate design standards.
- Develop and evaluate multiple layout alternatives for the South of Sloan site, and select the Recommended Plan for further refinement.

² *Transportation, Treasury, Housing and Urban Development, The Judiciary, The District of Columbia, and Independent Agencies Appropriations Act of 2006*, Pub. L. 109-115, 119 Stat. 2429, Section 180 (2005).

- Refine the requirements and development standards for the Heliport based on the Recommended Plan.

The second part of the PDDOM, the Heliport Development Standards, was developed to provide general guidelines for Clark County and lessees to use in the design and construction of their respective portions of the Heliport.

The third part of the PDDOM, the Preliminary Operations Supplement, was developed to establish operational and safety considerations for the Heliport.

January 2007 – As provided in the PDDOM, the Conceptual Heliport Layout Plan (HLP) was submitted to the FAA for preliminary review, and remains subject to further revision.

February 2007 – The FAA formally approved the *Forecasts of Grand Canyon Helicopter Air Tour Operations and Passengers*. Additionally, the FAA formally approved the South of Sloan heliport site to be included in the National Plan of Integrated Airport Systems (NPIAS).

April 2007 – The *Supplemental Site Suitability Assessment for the South of Sloan Site* was completed for the CCDOA, assessing the candidate heliport site added by the Board, to accommodate the heliport requirements identified in the *Needs Assessment*.

Appendix C. Supplement to Alternatives Analysis

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Appendix C. Supplement to Alternatives Analysis

Appendix C provides a summary of alternatives assessed prior to this Environmental Assessment (EA) including candidate sites as assessed in the Site Suitability Assessment [I-8], potential helicopter flight corridor routing options, and the results of the evaluations. In addition, this appendix includes descriptions of the sites included as initial alternatives considered in this EA.

C.1 Summary of the Site Suitability Assessment

As discussed in Chapter II, Alternatives, the Clark County Department of Aviation (CCDOA) identified and assessed 13 candidate sites in the Site Suitability Assessment for the location of a non-urban heliport for commercial Grand Canyon air tour operations in terms of their ability to meet the statutory intent of Nevada Revised Statute Chapter 495, Sections 300-320 (NRS 495) [I-4] and the goals and objectives documented in the Needs Assessment [I-7]. The candidate sites considered in the Site Suitability Assessment included three CCDOA owned and managed public airports and ten facilities not developed for aviation uses in the Las Vegas region; these sites are depicted on **Exhibit C-1**.

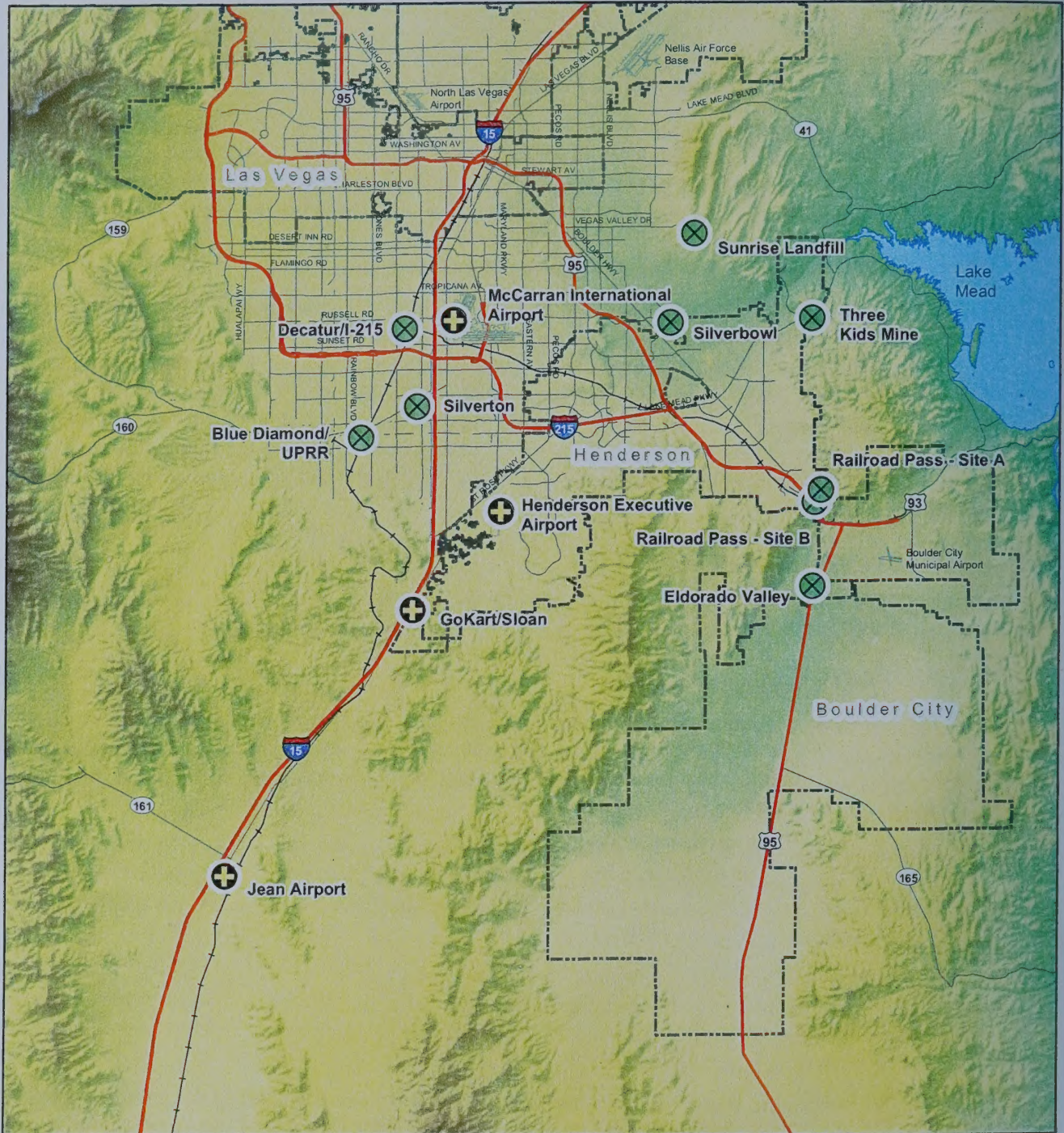
C.1.1 Screening Criteria

Candidate sites were evaluated in a three-tier screening process, as described below: preliminary screening criteria, secondary screening criteria, and assessment of feasible sites.

C.1.1.1 Preliminary Screening Criteria

The purpose of this screening was to evaluate the 13 candidate sites in accordance with statutory requirements set forth in NRS 495, CCDOA goals, and generalized facility requirements for an initial occupancy of the Heliport based on the Needs Assessment. Sites that failed to meet the minimum requirements were eliminated.

- **Compliance with NRS 495:** Compliance with the statute such that a new heliport facility (1) is not located at the largest airport in Clark County, (2) is not located near existing residential areas (e.g., existing residences located within one mile of the facility), and (3) reduces overall noise impacts on County residents, among other statutory requirements.
- **Land area:** Evaluated against a 40-acre minimum derived from a study of generalized regional heliport requirements completed as part of this assessment. Sites with potential for expansion (i.e. through land acquisition) were retained for further consideration even if its approximate acreage is less than 40 acres.
- **Drive time from customer base to the site (minutes):** For purposes of this analysis, Caesars Palace was designated as a central location on the Las Vegas Strip. Twenty-two minutes was preferred and 33 minutes was the maximum threshold set. Sites within the “acceptable drive time” of 30 minutes were retained for further evaluation.
- **Surface accessibility:** Ability for air tour operators to access the site within one mile or less from a primary roadway (i.e. interstate freeway or highway) and/or from a secondary roadway with minimal signalized intersections.



⊗ Eliminated candidate heliport site

⊕ Retained candidate heliport site

— Primary road

— Secondary road

— Railroad

--- Jurisdictional boundary

Source: Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit C-1

0 6 miles
↑
north

Candidate heliport Sites Evaluated in the Site Suitability Assessment

C.1.1.2 Secondary Screening Criteria

Secondary screening of the remaining candidate sites focused on physical and potential environmental issues carried forward from the preliminary screening were evaluated against the following secondary screening criteria:

- **Controlled airspace:** Potential flight corridor avoids controlled airspace.
- **Adjacent land ownership:** Adjacent land ownership status would not affect development of the site and/or long-term expansion potential of the site for additional heliport-related facilities, if necessary. A site surrounded by City, County, State, or federally owned land is considered more desirable than a candidate site surrounded by privately owned land.
- **Terrain and topography:** Relatively level terrain on the site and in the immediate vicinity.
- **Community issues:** Support and/or opposition to a candidate site.

C.1.1.3 Assessment of Feasible Sites

A relative comparison of the remaining candidate sites was completed using the criteria listed below. The assessment of remaining feasible sites was not used to eliminate candidate sites; rather, the purpose of the analysis in this tier was to determine their overall feasibility and provide information for future considerations.

- **Operational capability:** Assessment of close-in airspace compatibility, and imaginary surface and final approach/take off area (FATO) siting requirements.
- **Flight time considerations:** Ranges in round-trip flight times reflects evaluation of different flight corridor options, when relevant, between a candidate site and the designated Rendezvous Point enroute to Grand Canyon. The Rendezvous Point is a location where flight corridors converge from which Grand Canyon helicopter air tours commence.
- **Existing housing units associated with helicopter overflights:** The number of housing units is the total units within one-mile radius of the candidate site and under one-third mile buffer of potential flight corridors, where provided.
- **Future housing units associated with helicopter overflights:** The number of housing units is the total units within one-mile radius of the candidate site and under one-third mile buffer of potential flight corridors, where provided.
- **Federal and state sensitive lands:** Candidate sites in the vicinity of such lands and beneath potential helicopter flight corridors associated with a candidate site.

C.1.2 Screening Results

Table C-1 provides a summary of the evaluation process and the results of the Site Suitability Assessment. On the basis of that assessment, three sites deemed feasible sites: GoKart/Sloan, Eldorado Valley/Boulder City, and Jean Airport. The GoKart/Sloan site was determined to be the preferred site. McCarran International and Henderson Executive airports failed to the preliminary screening criteria; however, these facilities were retained throughout the screening to provide a basis of comparison against the existing condition for Grand Canyon helicopter air tour operations.

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Table C-1
Summary of Site Suitability Assessment

TIER	CRITERIA	CANDIDATE SITES												
		McCarran International Airport ^{1/}	Henderson Executive Airport	Jean Airport	Blue Diamond/ Union Pacific Railroad	Decatur/ Interstate 215	Eldorado Valley/ Boulder City	GoKart/ Sloan	Railroad Pass- Site A	Railroad Pass- Site B	Silverbowl	Silverton	Sunrise Landfill	Three Kids Mine
PRELIMINARY SCREENING	NRS 495	x	x	●	x	x	●	●	x	x	x	x	●	●
	Land Area (acres)	n.e. ^{2/}	● (157) ^{3/}	● (104) ^{3/}	○ (38)	x (34)	● (160)	● (49)	● (160)	○ (37)	● (70)	○ (42)	● (160)	● (44)
	Drive Time (minutes)	n.e. ^{4/}	○ (24.7)	○ (30.6)	● (15.0)	● (7.5)	○ (32.8)	● (17.6)	○ (27.4)	○ (27.4)	○ (25.0)	● (10.0)	x (36.3)	x (36.6)
	Surface Accessibility	n.e. ^{5/}	●	●	●	●	●	●	○	○	○	●	x	x
	Retain for Further Consideration?	yes ^{6/}	yes ^{6/}	yes	no	no	yes	yes	no	no	no	no	no	no
SECONDARY SCREENING	Controlled Airspace	n.e. ^{7/}	○	●			●	●						
	Adjacent Land Ownership	n.e. ^{8/}	○	●			●	●						
	Terrain and Topography	n.e. ^{9/}	●	●			●	●						
	Community Issues ^{10/}	Opposition	Opposition	Opposition			Opposition	Opposition						
	Retain for Further Consideration?	yes ^{6/}	yes ^{6/}	yes			yes	yes						
ASSESSMENT OF FEASIBLE SITES ^{11/}	Operational Capability	Capable	Capable	Capable			Capable	Capable						
	Flight Time Considerations (minutes)	39	39-48	51-52			24	40-41						
	Existing Housing Units Under Corridor	49,670	Up to 14,230	0			0	0						
	Future Housing Units Under Corridor	n.e. ^{12/}	16,953	n.e. ^{12/}			n.e. ^{12/}	Up to 8,605						
	Federal/State Sensitive Land at Site	None	None	None			None	None						
	Federal/State Sensitive Land Under Corridor	Existing	Potential	Potential			Potential	Potential						
IDENTIFIED AS SUITABLE SITE		no	no	yes			yes	preferred						

Notes:

- = Meets or exceeds criterion
- = Marginally meets criterion (not preferred)
- x = Does not meet criterion
- n.a. = Not applicable
- n.e. = Not evaluated
- 1/ = McCarran International Airport was retained throughout the site Suitability Assessment as it represents existing conditions for commercial Grand Canyon helicopter air tour operations.
- 2/ = A portion of the west side of the airfield at McCarran International Airport is currently used for helicopter air tour operations.
- 3/ = Land area for Henderson Executive and Jean airports is the total non-airfield land within the boundary of the aviation facility.
- 4/ = The drive time from the customer base (Caesars Palace) to McCarran International Airport is about 11 minutes. This baseline was used to establish the drive time criterion of the preferred 22 minutes, which is double the existing drive time.
- 5/ = Major primary roadways, including Interstates 215 and 15, are accessible within one mile of McCarran International Airport.
- 6/ = Although McCarran International and Henderson Executive Airports do not meet all of the screening criteria, both airports accommodate commercial tour operators and other helicopter operations. The CCDOA may not restrict helicopter operations at any of the airports that it owns and operates as public-use facilities.
- 7/ = McCarran is served by Class B airspace, which is characterized by large volumes of aircraft activity; helicopter air tour operators should avoid Class B airspace.
- 8/ = Much of the land adjacent to existing helicopter air tour facilities at McCarran are privately owned and may limit expansion potential of the site in the future, if necessary.
- 9/ = McCarran is located on level-terrain. Further, helicopter operators currently operate and are based out of McCarran.
- 10/ = The community expressed opposition to all of the candidate sites in one form or another. Due to lack of overwhelming opposition to any of the candidate sites, all of the sites were retained for further consideration.
- 11/ = The purpose of the feasibility assessment was to provide evaluation of the remaining candidate sites for future consideration. Therefore, no candidate sites were eliminated as a result of the feasibility assessment.
- 12/ = Estimates of future housing units associated with helicopter overflights were provided by the City of Henderson; therefore, estimates were not available for McCarran International Airport, Jean Airport, Eldorado Valley/Boulder City candidate sites.

Source: Ricondo & Associates, Inc., *Site Suitability Assessment for a Southern Nevada Regional Heliport*, December 2003
 Prepared by: Ricondo & Associates, Inc., April 2008

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C.2 Modification of Existing Helicopter Flight Corridors

The existing helicopter corridors used for Grand Canyon air tours from McCarran International Airport are shown on **Exhibit C-2**. Three generalized corridors are used by Grand Canyon air tour operators at McCarran, as described below:

- **Tropicana:** Helicopters departing on Grand Canyon tours are directed to fly eastbound over Tropicana Avenue.
- **Charleston:** Helicopters returning from Grand Canyon tours are directed to fly westbound over Charleston Boulevard until Fremont Street, then toward the northwest over Fremont Street until west of downtown Las Vegas, then southbound along the Union Pacific Railroad tracks, west of Las Vegas Boulevard (the Las Vegas Strip), then southbound over Industrial Road, remaining west of the Las Vegas Strip.
- **Strip Railroad:** Helicopters departing on Las Vegas Strip tours are directed to fly northbound over Koval Lane, and to fly in an oval pattern around the Las Vegas Strip, returning southbound over the Union Pacific Railroad tracks and over Industrial Road.

These corridors were recognized and formally established in the mid- to late-1990s by the Federal Aviation Administration (FAA) through Letters of Agreement with the helicopter air tour operators. Minor modifications to the corridors have been made since the late-1990s to the extent possible to reduce overflight noise on residential neighborhoods.¹

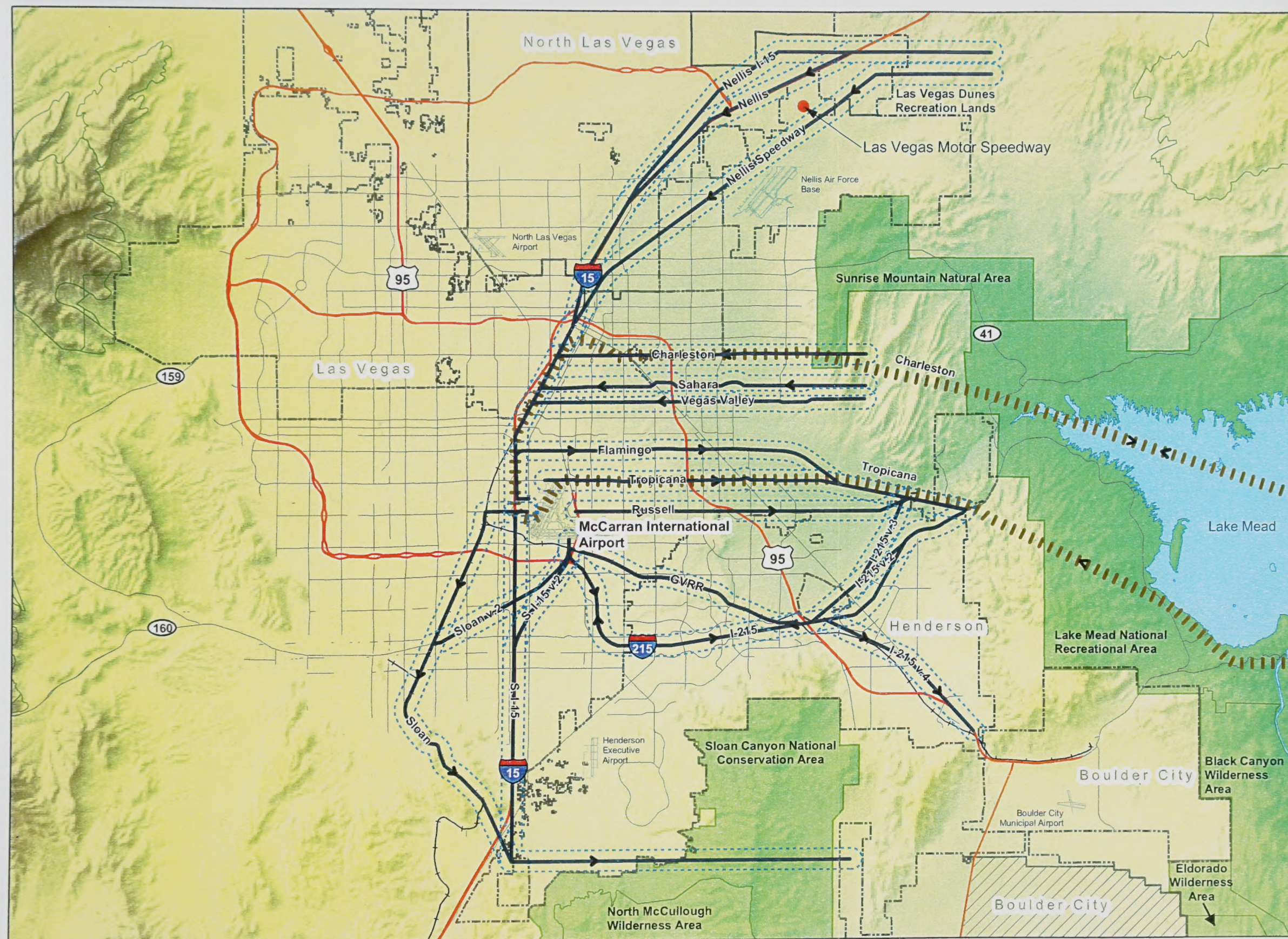
Prior to the amendment of Nevada State Legislature amended NRS 495 and completion of planning studies for a non-urban heliport, the CCDOA, in conjunction with the FAA and helicopter operators, assessed multiple corridor options as part of ongoing efforts to reduce helicopter overflights near residential areas. The results of the assessments are documented in **Table C-2**.

The federal government, through the FAA, has exclusive jurisdiction over airspace and therefore is responsible, along with the pilot-in-command, for controlling the movement of aircraft. FAA Air Traffic Control (ATC) dictates helicopter operations in controlled airspace surrounding airports but does not control the movement of helicopters in uncontrolled airspace or require helicopter operators to use particular flight corridors to travel between locations. Nevertheless, FAA ATC, the FAA Flight Standards District Office, the CCDOA, and helicopter operators historically have identified preferred flight corridors to reduce overflights of residential areas. These flight corridors are documented in Letters of Agreement between the FAA and the helicopter tour operators.

In addition, the CCDOA participates with representatives from FAA ATC, the FAA Flight Standards District Office, and the helicopter operators in a regularly scheduled Helicopter Users' Forum to develop and review noise mitigation recommendations, including ongoing minor modifications to the existing Grand Canyon helicopter routing procedures, which reduce direct overflights of developed residential areas.

¹ Advisory Committee on Helicopter Noise, *2003 Annual Report*, May 2004. In December 2001, the Clark County Board of Commissioners adopted an ordinance that established an Advisory Committee on Helicopter Noise through which various parties can discuss, review, and, where appropriate, formulate potential solutions. The ordinance provided for the appointment of ten members to the committee: seven members who represent neighborhoods directly affected by helicopter overflights, two members who represent commercial operators of helicopters, and one member who represents the Board of County Commissioners.

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Source: Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008.

0 3.5 miles
↑
north

Legend

- McCarran International Airport existing helicopter flight corridor to or from the Grand Canyon
- Eliminated helicopter flight corridor alternative to and/or from the Grand Canyon
- Corridor buffer
- Direction of traffic

Other features

- Primary road
- Secondary/State road
- Railroad
- Jurisdictional boundary
- National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area
- Boulder City conservation easement

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Table C-2 (1 of 2)

Evaluation of Helicopter Flight Corridors

Corridor name	Description of corridor and reason(s) not implemented at time considered	Reason(s) eliminated
Green Valley Railroad (GVRR)	Reinstatement of the Green Valley Railroad Corridor: This corridor was considered in the late 1990s, but was not reinstated because of FAA concerns with Air Traffic Control workload when the corridor was previously in use, and because of conflicts with fixed-wing aircraft traffic at McCarran International Airport (Based on previous corridor utilization, increases in the use of the corridor would have a potential impact on the primary arrival corridor for fixed-wing aircraft operating at McCarran International Airport. The Green Valley Railroad corridor is still used today for ad hoc helicopter flight operations).	ATC workload; conflicts with fixed-wing traffic at McCarran
Sahara and Vegas Valley	Inbound along Sahara Avenue or Vegas Valley Drive: This corridor was considered in the late 1990s, but was not implemented because of conflicts with arrivals into the north-south runways at McCarran International Airport. Additionally, this corridor would not avoid direct overflight of developed residential areas, and would transfer noise exposure from one neighborhood to another.	Conflicts with fixed-wing traffic at McCarran; noise impact on community
I-215, I-215 v.2, and I-215 v.3	Inbound and outbound over I-215: This corridor, with three exit variations east of I-95, was considered in 2000, and tested in 2001, but was not implemented because of concerns with compliance (a bend in the I-215 roadway alignment lured some pilots to short-cut the curved routing procedure, directly over a developed residential area), and a desire for higher altitudes. Higher altitudes were being sought for the I-215 corridor (4,000 feet above MSL instead of 3,000 feet above MSL) to ensure that the corridor would not transfer noise exposure from one neighborhood to another. The I-215 corridor at 4,000 feet above MSL was not implemented because the corridor could only be used when fixed-wing aircraft were only landing from the south (which historically occurs less than 10 percent of the year) to avoid conflict with arrivals from the east, which is the primary arrival corridor for fixed-wing aircraft. (Based on previous corridor utilization, increases in the use of the corridor had a potential impact on the primary arrival corridor for fixed-wing aircraft operating at McCarran International Airport.)	Conflicts with fixed-wing traffic at McCarran; noise impact on community
Flamingo and Russell	Outbound over Flamingo Road or Russell Road: These corridors were considered in the late 1990's, but were not implemented because of conflicts with fixed-wing aircraft arrivals into McCarran International Airport. Additionally, this corridor would transfer noise exposure from one neighborhood to another.	Conflicts with fixed-wing traffic at McCarran; noise impact on community
Sloan and Sloan v.2	Outbound along the Sloan departure corridor: This corridor heads south along the Union Pacific Railroad tracks west of McCarran International Airport, to a power-line corridor used as a visual reference, south of Henderson Executive Airport, and then east. This corridor was proposed in 1997 and tested in 2001 by Maverick Helicopters, but was not implemented because operators refused to use the corridor due to the increased fuel needed to operate on that corridor.	Increases in flight time and fuel consumption; corridor not feasible for operators
Nellis and Nellis I-15	Inbound over Nellis Air Force Base and over I-15: This corridor was considered in 2000 and tested with the Metropolitan Police Department, but was not implemented because of the increased fuel needed to operate on that corridor and security issues as the result of flight proximity to Nellis Air Force Base.	Security issue

Table C-2 (2 of 2)

Evaluation of Helicopter Flight Corridors

Corridor name	Description of corridor and reason(s) not implemented at time considered	Reason(s) eliminated
Nellis Speedway	Inbound north of Nellis Air Force Base to the Las Vegas Motor Speedway: This corridor was considered in 2001, but was not implemented because of security issues as the result of flight proximity to Nellis Air Force Base.	Security issue
S.I-15	Outbound south along I-15: This corridor was considered in the late 1990s, but was not implemented because of the impact on fixed-wing aircraft departures to the south and arrivals from the north, and because of the increase in flight-time, similar to that found with the test of the Sloan corridors.	Conflicts with fixed-wing traffic at McCarran

Notes:

MSL = Mean Sea Level

ATC = Air Traffic Control

Sources: Clark County Department of Aviation; Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., April 2008

A number of different helicopter corridors, listed in Table C-2 and shown on **Exhibit C-3**, have been explored by the CCDOA in coordination with the FAA and/or the helicopter air tour operators through the Helicopter Users' Forum. All of the corridors were located over major thoroughfares or over developed commercial and/or industrial areas. As summarized in Table C-2, the corridors could not be implemented due to safety, community impact concerns, or operator refusal to use the corridors and would therefore not be considered as initial alternatives in this EA.

C.3 Initial Alternative Sites Considered in the Environmental Assessment

Brief descriptions of the alternative sites for development of heliport facilities that considered as initial alternatives in this EA are provided below.

C.3.1 Sites Not Currently Developed for Aviation Uses

As a build alternative, a new facility to accommodate Grand Canyon helicopter air tours would be constructed on a site not currently developed for aviation uses.

- **South of Sloan** – The South of Sloan site is located to the east of Interstate 15 and Las Vegas Boulevard South, about 5.5 miles south of St. Rose Parkway. The site consists of about 229 acres and is undeveloped and clear of structures. The site is within unincorporated Clark County, is publicly owned and managed by the BLM. The land north, south, and east of the site is undeveloped public land.

Although it was not evaluated in the Site Suitability Assessment, the South of Sloan site identified in early 2004 after completion of the Site Suitability Assessment. Based on public input and a separate site evaluation (SOS Site Assessment [I-9]), this site was designated by the County as the preferred site for a Southern Nevada Regional Heliport. (See Appendix B for a timeline of planning studies.)

- **GoKart/Sloan** – The GoKart/Sloan site is located on the east of Interstate 15 and Las Vegas Boulevard South, about three miles south of St. Rose Parkway. The GoKart/Sloan site, which is owned by Clark County, consists of about 49 acres. The site is partially developed and has several structures in its vicinity, including a go-kart facility, power lines, telephone lines, and billboards that run along Interstate 15. The site is surrounded primarily by vacant public and private land.

This site was identified as the preferred site based on the screening criteria and evaluation from the Site Suitability Assessment. Based on refined facilities planning for the Heliport and analysis in this EA, it was determined that the existing private land located on the western portion of the site would not limit the development and operation of the Heliport.

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3.3 Initial Alternative Sites Considered in the Environmental Assessment

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3.3.1 Sites Not Currently Developed for Aviation Uses

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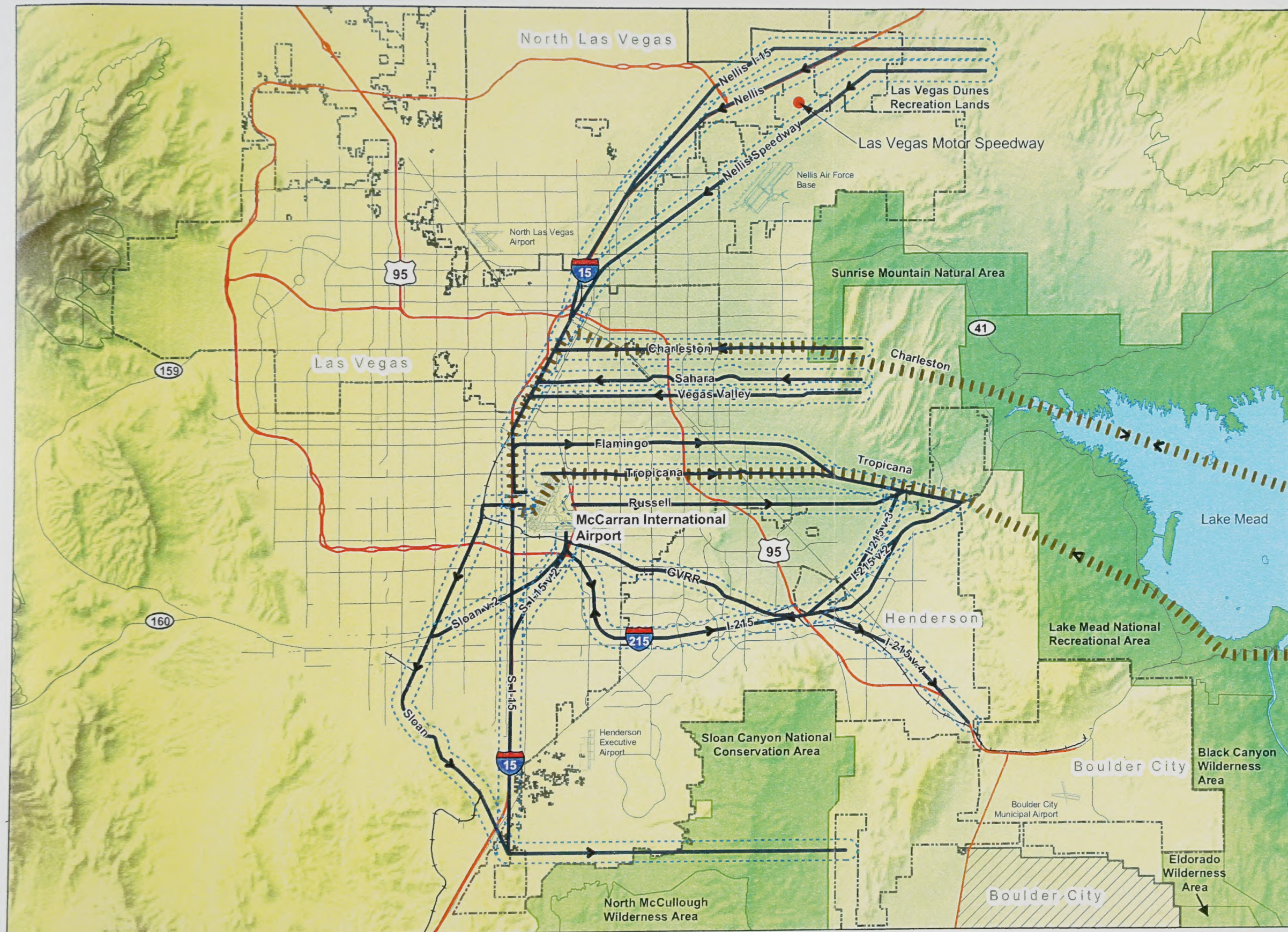
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Legend

- McCarran International Airport existing helicopter flight corridor to or from the Grand Canyon
- Eliminated helicopter flight corridor alternative to and/or from the Grand Canyon
- - - - - Corridor buffer
- Direction of traffic

Other features

- Primary road
- Secondary/State road
- + + + Railroad
- - - - - Jurisdictional boundary
- National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area
- ▨ Boulder City conservation easement

Source: Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008.

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- **Eldorado Valley** – The Eldorado Valley site is located about 2.5 miles south-southwest of the intersection of U.S. Highways 95 and 93 in Boulder City, Nevada. The site consists of approximately 54 acres. The site is publicly owned and managed by the BLM. The majority of the land around the site is also undeveloped, publicly owned and managed by the BLM. This greenfield site is undeveloped and clear of structures, except for high voltage power lines and transmission lines that traverse the site.

This site is about one-half mile north of the site identified in the Site Suitability Assessment as the Eldorado Valley/Boulder City site. The revised location for the site was identified after completion of the Site Suitability Assessment based on discussions with City of Boulder City representatives, and was selected so that it would be entirely within unincorporated Clark County, and outside the limits of Boulder City.

- **Sunrise Landfill** – The Sunrise Landfill site is located at the eastern end of Vegas Valley Drive, about 4.9 miles east of the intersection of Boulder Highway and U.S. Highway 95. The Sunrise Landfill site consists of approximately 160 acres. The land is leased by Clark County from the BLM and is clear of structures. Most of the land around the site is undeveloped. The closest residence is about 1.5 miles to the west.

The site was a municipal solid waste landfill originally designed with a refuse capacity of approximately 61 million cubic yards. With an estimated 47 million cubic yards of waste in place, the landfill accepted its last load of waste on October 8, 1993, and was officially closed in March 1995.

C.3.2 Existing Aviation Facilities

As a partial-build alternative, facilities would be constructed to accommodate Grand Canyon helicopter air tours at an existing aviation facility. Grand Canyon helicopter air tour operators would be able to relocate to an improved existing aviation facility in the Las Vegas region.

- **Henderson Executive Airport** – This airport is located within the City of Henderson, and about 6 miles south of McCarran International Airport. The airport occupies 722 acres, of which about 157 acres are non-airfield land [I-8]. Henderson Executive Airport is owned by Clark County and is operated by the Clark County Board of County Commissioners through the CCDOA, with a portion of the land leased from the BLM. The facility is developed as an airport, with adjacent residential land uses.
- **Jean Airport** – Jean Airport is a developed aviation facility located adjacent to Interstate 15 and State Highway 161 in Jean, Nevada. This airport occupies about 317 acres, of which 104 acres are non-airfield land. Jean Airport is owned by Clark County and operated by the Clark County Board of County Commissioners through the CCDOA. The airport's primary role is to accommodate sport aviation, including aerobatic aircraft, gliders, and ultralight aircraft. The Gold Strike Casino, which is located at the northeast end of Jean Airport, also attracts transient general aviation activity to the airport. The area surrounding the airport is partially developed, with commercial and industrial areas north of the airport.
- **North Las Vegas Airport** – North Las Vegas Airport is located in the City of North Las Vegas, Clark County. The airport is about five miles northwest of downtown Las Vegas, and about eight miles northwest of McCarran. North Las Vegas Airport occupies about 797 acres of land. The airport is owned by Clark County and is operated by the Clark County Board of County Commissioners through the CCDOA. North Las Vegas Airport serves as the primary general aviation reliever airport to McCarran; the Airport also accommodates Grand Canyon

tour operators, several based blimps, and provide landing and temporary basing for blimps that visit Las Vegas for major conventions and promotional events.

- **Mesquite Municipal Airport** – Mesquite Municipal Airport is located about two miles north of the City of Mesquite near the Nevada/Utah border, and about 80 miles northeast of Las Vegas. The Airport is owned and operated by the City of Mesquite and occupies 513 acres of land.
- **Boulder City Municipal Airport** – Boulder City Municipal Airport is located about 22 miles southeast of McCarran and one mile southwest of Boulder City. The airport occupies 512 acres of land. The City of Boulder City owns and operates this airport, which accommodates general aviation, helicopter operations, and some Grand Canyon air tour operations.

Appendix D. Helicopter Noise Analysis

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Appendix D. Helicopter Noise Analysis

D.1 General Characteristics of Helicopter Noise

Helicopter noise originates from three components of the helicopter: the rotors, engine, and transmission.

Generally speaking helicopters are equipped with two rotors. The main rotor is located on the top of the cabin and is used to generate lift. The other rotor (tail rotor) is located in the tail and is used to produce a sideways force that prevents the body of the helicopter from rotating and is also used to steer the helicopter. Two types of helicopters – the AS350 and EC130 are used by Grand Canyon tour operators based in Clark County. Almost all helicopters are equipped with one of two types of tail rotors: a conventional tail rotor or a Fenestron tail rotor. By nature of its construction, the Fenestron tail rotor is quieter than the conventional tail rotor. The AS350 is equipped with a conventional tail rotor and the EC130 is equipped with the Fenestron tail rotor.

Power is transferred to the rotors from the engine via a main gearbox. The engine's revolutions per minute (RPMs) are reduced from thousands to hundreds by increasing the torque and slowing the rotation to an acceptable level for the rotors. Noise generated by the engine depends on the type/model of engine powering the helicopter. The transmission drives the mast, which provides direct rotation to the rotors. Noise generated by the transmission depends on the type/model of engine and transmission powering the helicopter.

D.2 Definition of Noise

Loudness, measured in decibels (dB), is the most commonly used characteristic to describe noise. The A-weighted decibel (dBA) is used in aircraft¹ noise analyses because it incorporates a frequency-dependent rating scale that more closely associates sounds and sound frequencies with the sensitivity of the human ear. Some common sounds on the dBA scale, relative to ordinary conversation, are listed in **Table D-1**. As shown in the table, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change corresponds to a factor of 10 in relative sound energy. Generally, sounds with differences of 2 dBA or less are not perceived to be noticeably different by most listeners. A noise event produced by a helicopter flyover is usually characterized by a buildup to a maximum noise level as the helicopter approaches, and then a decrease in the noise level through a series of lesser peaks or pulses after the aircraft passes and the noise recedes.

¹ As used in report, "aircraft" includes helicopters.

Table D-1

Common Sounds on the A-Weighted Decibel Scale

Sound	Sound Level (dBA)	Relative Loudness (approximate)	Relative Sound Energy
Rock music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	$\frac{1}{2}$	0.1
Average office	40	$\frac{1}{4}$	0.01
City residence	30	$\frac{1}{8}$	0.001
Quiet country residence	20	$\frac{1}{16}$	0.0001
Rustle of leaves	10	$\frac{1}{32}$	0.00001
Threshold of hearing	0	$\frac{1}{64}$	0.000001

Source: U.S. Department of Housing and Urban Development, *Aircraft Noise Impact—Planning Guidelines for Local Agencies*, 1972.
 Prepared by: Ricondo & Associates, Inc., April 2008

D.3 Noise Analysis Methodology

The methodology used for this helicopter noise analysis included the: (1) use of noise descriptors developed for helicopter noise analyses, (2) application of a computer model that provides estimates of helicopter noise levels, and (3) development of basic data and assumptions as input to the computer model.

D.3.1 Noise Descriptors

Noise is measured using a variety of scientific metrics. As a result of extensive research into the characteristics of aircraft noise and human response to that noise, a standard system of descriptors has been developed for use in aircraft noise exposure analyses. These descriptors, as used for this helicopter noise analysis, are described in the following subsections.

D.3.1.1 A-Weighted Sound Pressure Level

The decibel is used to describe sound pressure level. A-weighting approximates the human ear's sensitivity to sounds of different frequencies. Without this filtering, calculated and measured sound levels would include sounds that the human ear cannot hear, such as dog whistles (high frequency) and sounds made by large buildings with changes in temperature and wind (low frequency).

D.3.1.2 Maximum A-Weighted Sound Level

The maximum A-weighted sound level ($L_{\max}$) is the loudest part of a noise event, measured in decibels. As an aircraft overhead passes an observer, the noise increases to a maximum level and then decreases as the aircraft passes. Some sound level meters measure the maximum, or $L_{\max}$, level.

D.3.1.3 Equivalent Sound Level (Leq)

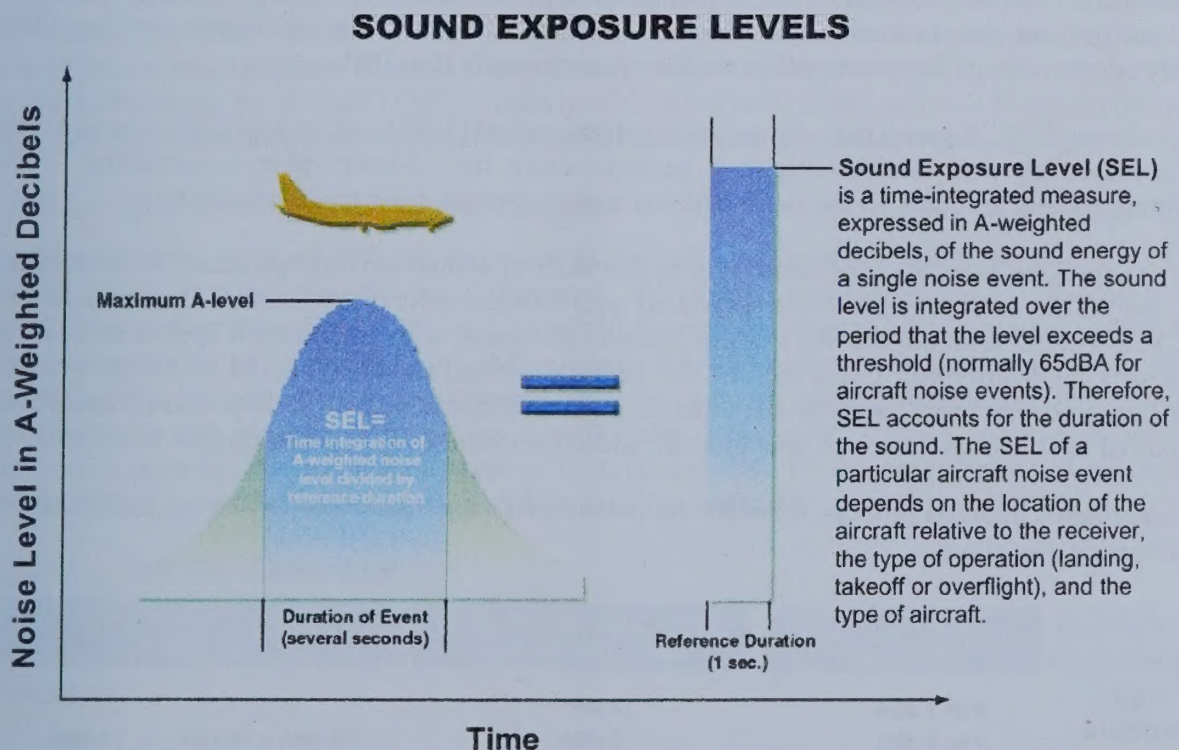
Leq is a standard measure of sound energy averaged over a specified time period. This metric indicates the constant sound level in decibels which is equivalent to the amount of sound energy produced by a series of events having fluctuating sound levels during the specified time period.

D.3.1.4 Sound Exposure Level

Sound exposure level (SEL) is a time-integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that it exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The SEL for a particular aircraft noise event is a numerically higher value than the ($L_{\max}$) for the same event. This is because the SEL consolidates the energy of the entire noise event into a reference duration of one second. The SEL is not “heard”, but is a derived value used for calculation of cumulative aircraft noise exposure as defined by the DNL. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft. The SEL concept is depicted on Exhibit D-1.

Exhibit D-1

Sound Exposure Level Concept



Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc., April 2008

D.3.1.5 Background Sound Level (L_{90})

L_{90} describes the noise level exceeded 90 percent of the time during the sample period. L_{90} is useful for describing the background (or residual) noise level in the absence of any easily defined noise events, such as those caused by occasional traffic, barking dogs, or aircraft overflights.

D.3.1.6 Day-Night Average Sound Level

Day-night average sound level (DNL) is a method used to describe the existing and predicted cumulative noise exposure from aircraft operations in the vicinity of an airport or a heliport. The DNL is expressed in dBA and represents the time-weighted average noise level over a 24-hour period. The DNL is used to estimate the effects of specific noise levels on land uses. The U.S. Environmental Protection Agency (EPA) introduced the DNL metric in 1976 as a single number measurement of community noise exposure. The Federal Aviation Administration (FAA) adopted DNL as the noise metric for measuring cumulative aircraft noise under Title 14, Code of Federal Regulations, Part 150 (14 CFR Part 150), *Airport Noise Compatibility Planning*. DNL has also been adopted for measuring cumulative noise exposure by several other government agencies, including the Department of Housing and Urban Development, the Veterans Administration, the Department of Defense, the Coast Guard, and the Federal Transit Administration. DNL is widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required for use in aircraft noise exposure analyses, land use compatibility planning, environmental assessments, and environmental impact statements for airport/heliport improvement projects. Although additional noise metrics may be used to characterize aircraft noise and environmental impacts, neither Clark County nor the State of Nevada mandates the use of metrics other than DNL.

In calculating DNL, for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.), sound levels are increased by a 10-decibel-weighting penalty before the 24-hour value is computed. The weighting penalty accounts for the more intrusive nature of noise during nighttime hours.

DNL is expressed as an average noise level on the basis of annual aircraft operations for a calendar year, not on the average noise levels associated with different aircraft operations. To calculate the DNL at a specific location, the SELs at that location associated with each aircraft operation (landing or takeoff) are determined. Using the SEL for each noise event and applying the 10-decibel penalty for nighttime operations as appropriate, a partial DNL is then calculated for each aircraft operation. The partial DNLs for each aircraft operation are added logarithmically to determine the total DNL.

The logarithmic addition process, whereby the partial DNLs are combined, can be approximated by the following guidelines:

How to Add Decibels	When two DNLs differ by:	Add the following amount to the higher value	For Example
	0 or 1 dBA	3 dBA	
	2 or 3 dBA	2 dBA	
	4 to 9 dBA	1 dBA	
	10 dBA or more	0 dBA	70 dBA + 70 dBA = 73 dBA

Adding the noise from a relatively quiet event (60 dBA) to a relatively noisy event (70 dBA) results in a value of 70 dBA because the quieter event has only one-tenth the sound energy of the noisier

event. As a result, the quieter noise event is “drowned out” by the noisier one, and there is no increase in the overall noise level as perceived by the human ear.

DNL is used to describe existing and predicted noise exposure in communities in an airport/heliport vicinity based on the average number of daily operations over the year and the average annual operational conditions at the airport/heliport. Therefore, at a specific location near an airport/heliport, the noise exposure on a particular day is likely to be higher or lower than the annual average noise exposure, depending on the specific operations at the airport/heliport that day.

D.3.2 Integrated Noise Model

The Integrated Noise Model (INM) was developed by the FAA, and is the computer model required for use in developing aircraft/helicopter noise exposure maps. The INM contains aircraft operational and noise data in a database that reflects average aircraft operating conditions. The INM was originally designed for modeling noise from fixed-wing aircraft. However, with the introduction of Version 7.0² of the INM, the FAA incorporated the noise modeling capabilities of its Helicopter Noise Model (HNM). INM Version 7.0 is the latest accepted state-of-the-art tool for determining the total effect of aircraft noise at and around airports and heliports, and is the model that was used to determine potential helicopter noise impacts for this analysis.

Because the DNL is fundamentally based on the noise levels produced by individual aircraft operations, selection of appropriate aircraft-type designations from the INM database is of critical importance. The INM Version 7.0 database contains both of the helicopter types that are used by Grand Canyon tour operators based in Clark County. Those helicopter types are designated within the INM database as the SA350D (AS350) and the EC130. The SA350D and EC130 helicopter types were used without modification to model helicopter noise levels for this analysis.

D.3.2.1 DNL and Noise Exposure Ranges

A noise exposure value of DNL 65 was used as the criterion level for the noise analysis. Two specific ranges of noise exposure were estimated: (1) DNL 65 and higher and (2) DNL 60 to 65. DNL 65 and higher is the FAA’s standard threshold for land use compatibility planning purposes in areas surrounding a heliport or airport. Although the FAA considers aircraft noise exposure lower than DNL 65 to be compatible with residential land uses, persons residing outside the DNL 65 noise exposure area may still be annoyed by aircraft noise. However, Clark County agencies use information regarding noise exposure between DNL 60 and DNL 65 for local planning purposes and therefore DNL 60 noise contours are depicted on exhibits in this EA.

D.3.2.2 The DNL Descriptor

The validity and accuracy of DNL calculations depend on the basic information used in the calculations. For future heliport activities, the reliability of DNL calculations is affected by a number of variables:

- Future aviation activity—the number of helicopter operations, the types of helicopters in the fleet mix, the times of operations (daytime and nighttime), and helicopter flight tracks—are estimates or forecasts, the achievement of which cannot be assured.
- Although new helicopter types may be introduced in the future, current models were used as input to the INM to estimate future activity.

- The noise descriptors used as the basis for calculating DNL represent typical human response (and reaction) to aircraft/helicopter noise. Because people vary in their responses to noise and because the physical measure of noise accounts for only a portion of an individual's reaction to that noise, DNL can be used only to obtain an average response to aircraft noise that might be expected in a community.
- Single flight tracks used in computer modeling represent a wider band of actual flight tracks.

These uncertainties aside, DNL mapping was developed as a tool to assist in land use planning around airports/heliports. Mapping is best used for comparative purposes rather than to provide absolute values. DNL calculations provide valid comparisons between different potential conditions, so long as consistent assumptions and data are used for all calculations.

Thus, sets of DNL calculations can show anticipated changes in aircraft/helicopter noise exposure over time, or can indicate which of a series of simulated situations would be better, and generally how much better, from the standpoint of noise exposure. However, a line drawn on a map is not meant to imply that a particular noise condition exists on one side of that line and not on the other. DNL calculations are a means for comparing noise effects, not for precisely defining them relative to specific parcels of land.

Nevertheless, DNL contours can be used to (1) highlight an existing or potential aircraft noise problem that requires attention, (2) assist in the preparation of noise compatibility programs, and (3) provide guidance in developing land use controls, such as zoning ordinances, subdivision regulations, and building codes. DNL has been, and is still, considered to be the best methodology available for depicting aircraft/helicopter noise exposure.

D.3.2.3 Graphic Representation of DNL

Contours are lines on a map that connect points of equal DNLs, much like topographic contour lines are drawn on a map to indicate ground elevations. For example, a contour is drawn to connect all points exposed to DNL 65; another may be drawn to connect all points exposed to DNL 70; and so forth. Generally, noise contours are plotted at 5-DNL intervals. Noise contours were developed for this analysis in conformance with FAA guidelines included in FAA Orders 5050.4B and 1050.1E and 14 CFR Part 150. For this analysis, the INM was used to produce DNL 65 and DNL 60 helicopter noise exposure contours.

D.3.3 Basic Data and Assumptions for Developing Noise Exposure Maps

The primary data required to develop helicopter noise exposure maps using INM Version 7.0 are:

- The existing and forecast number of helicopter operations, by helicopter type, and with daytime or nighttime flight characteristics.
- Operational information, including use of the runways or touchdown and liftoff areas, location and use of flight tracks (the paths that pilots fly to arrive at and depart from the airport or heliport), departure profiles, and existing noise abatement procedures.

D.3.3.1 Helicopter Operations

To determine existing and projected noise exposure, helicopter operations associated with the average day of the year are used in the INM. Helicopter operations data for an average day in 2004 were used to represent existing conditions in this environmental assessment. The 2004 average annual day condition is based on actual helicopter operations data collected by AirScene². Forecasts of operations for the average day in 2011 and 2017 were derived from the annual forecasts presented in Chapter III of this EA.

Existing and forecast levels of helicopter operations under the Proposed Action are presented in **Table D-2**. Existing and forecast levels of helicopter operations under the No Action alternative are presented in **Table D-3**. As shown in Table D-2, the number of Grand Canyon tour departures at the Heliport site under the Proposed Action is projected to be 29,500 in 2011 and 37,300 in 2017. It was assumed that the operators of Las Vegas Strip tours would not relocate to the proposed Heliport site from McCarran. Las Vegas Strip tours would continue to be accommodated at McCarran under the Proposed Action – 8,400 annual tour departures in 2011 and 9,100 annual tour departures in 2017. Under the Proposed Action there would be 9,800 Grand Canyon tour departures at McCarran in 2011 and 12,400 annual Grand Canyon tour departures in 2017. Under the Proposed Action it is anticipated that some helicopter operations, both Grand Canyon tours and Las Vegas Strip tours, would be accommodated at other locations in the region (11,100 annual tour departures in 2011 and 15,600 annual tour departures in 2017). These helicopter movements were not assessed or evaluated in this environmental assessment.

As shown in Table D-3, the number of Grand Canyon tour departures at McCarran under the No Action alternative is projected to be 29,500 in 2011 and 37,300 in 2017. Las Vegas Strip tours would continue to be accommodated at McCarran under the No Action alternative – 8,400 annual tour departures in 2011 and 9,100 annual tour departures in 2017. It is anticipated that some helicopter operations, both Grand Canyon tours and Las Vegas Strip tours, would be accommodated at other locations in the region under the No Action alternative (20,900 annual tour departures in 2011 and 28,000 annual tour departures in 2017).

² AirScene is a proprietary software package developed and licensed by Rannoch Corporation that provides data to the CCDOA regarding aircraft and helicopter operations at McCarran. The CCDOA has used the software package since July 2000.

Table D-2

Helicopter Air Tour Departures – Proposed Action

Year	McCarran International Airport		Heliport Site ^{1/}		Other Facility ^{2/}		Total	
	Annual Grand Canyon Tour Departures	Annual Las Vegas Strip Tour Departures	Annual Grand Canyon Tour Departures	Annual Las Vegas Strip Tour Departures	Annual Grand Canyon Tour Departures	Annual Las Vegas Strip Tour Departures	Annual Grand Canyon Tour Departures	Annual Las Vegas Strip Tour Departures
Historical								
2004	33,190	11,501	-	-	-	-	33,190	11,501
2005	37,595	12,775	-	-	-	-	37,595	12,775
2006	36,865	12,045	-	-	-	-	36,865	12,045
Forecast								
2011	9,800	8,500	29,500	-	4,400	6,700	43,700	15,200
2012	10,200	8,600	30,700	-	4,500	7,200	45,400	15,800
2013	10,600	8,700	31,900	-	4,700	7,700	47,200	16,400
2014	11,000	8,800	33,200	-	4,900	8,300	49,100	17,100
2015	11,500	8,900	34,500	-	5,100	8,900	51,100	17,800
2016	11,900	9,000	35,900	-	5,300	9,500	53,100	18,500
2017	12,400	9,100	37,300	-	5,500	10,100	55,200	19,200

Notes:

1/ It was assumed that Las Vegas Strip tours would not be accommodated at the proposed Heliport site.

2/ Not evaluated in the environmental assessment.

Sources: Clark County Department of Aviation using data from AirScene (2004 departures); Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., April 2008

Table D-3

Helicopter Air Tour Departures – No Action Alternative

Year	McCarran International Airport		Other Facility ^{1/}		Total	
	Annual Grand Canyon Tour Departures	Annual Las Vegas Strip Tour Departures	Annual Grand Canyon Tour Departures	Annual Las Vegas Strip Tour Departures	Annual Grand Canyon Tour Departures	Annual Las Vegas Strip Tour Departures
Historical						
2004	33,190	11,501	-	-	33,190	11,501
2005	37,595	12,775	-	-	37,595	12,775
2006	36,865	12,045	-	-	36,865	12,045
Forecast						
2011	29,500	8,500	14,200	6,700	43,700	15,200
2012	30,600	8,600	14,800	7,200	45,400	15,800
2013	31,900	8,700	15,300	7,700	47,200	16,400
2014	33,100	8,800	16,000	8,300	49,100	17,100
2015	34,500	8,900	16,600	8,900	51,100	17,800
2016	35,800	9,000	17,300	9,500	53,100	18,500
2017	37,300	9,100	17,900	10,100	55,200	19,200

Note:

1/ Not evaluated in the environmental assessment.

Sources: Clark County Department of Aviation using data from AirScene (2004 departures); Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., April 2008

Helicopter Fleet Mix

The helicopter fleet mix consists of two helicopter types – the AS350 and the EC130. The percentages of departures by helicopter type and year are shown in **Table D-4**. These fleet mix percentages were applied to the operations data used in the INM analysis for the Proposed Action and No Action alternative.

Table D-4

Percentage of Departures by Helicopter Type

Year	Helicopter Type	
	AS350	EC130
2004	80.0%	20.0%
2011	53.2%	46.8%
2017	42.9%	57.1%

Source: Ricondo & Associates, Inc., based on helicopter air tour operator surveys.

Prepared by: Ricondo & Associates, Inc., April 2008

Time of Day

AirScene data were used to determine the number of helicopter operations at McCarran International Airport during the daytime hours (7:00 a.m. to 9:59 p.m.) and nighttime hours (10:00 p.m. to 6:59 a.m.) in 2004. These data indicated that 1 percent of helicopter operations occurred during nighttime hours. As mentioned earlier, the calculation of DNL includes a 10-decibel weighting penalty for those operations occurring during the nighttime hours. It was assumed that the split between daytime and nighttime operations for each helicopter type would be the same in 2011 and 2017 as that recorded in 2004.

D.3.3.2 Heliport Operational Information

The assumed future uses of the flight tracks to and from the airport or heliport are important in determining where helicopters are flying and, consequently, the noise levels generated on the ground.

Helipad Use and Design Criteria

Helipad use was determined based on several factors, including: historical wind analysis, conversations with helicopter operators at McCarran International Airport, air traffic control procedures in the vicinity of McCarran, Federal Aviation Regulations pertaining to helicopter operations, FAA Advisory Circulars pertaining to heliports and air traffic patterns, and observations of helicopter activities in the Las Vegas region.

Specific criteria that were applied to the airspace analysis around the sites were referenced from FAA Advisory Circular 150/5390-2A, *Heliport Design*, 14 CFR Part 77 *Objects Effecting Navigable Airspace*, FAA Order 8260.42A *Helicopter Global Positioning System (GPS) Non-Precision Approach Criteria*, and data acquired from the Las Vegas TRACON and the FAA Digital Obstruction File.

The wind analysis for the Heliport site utilized historical weather data from January 1992 to January 2001 collected at the McCarran International Airport weather station. Helipad use was calculated by assuming that helicopters would use helipads aligned with prevailing winds when

winds are above three knots and would use the helipads providing the most direct route during calm winds.

According to FAA criteria, the design of helicopter approach paths should be based on prevailing wind direction, crosswind component (150 degrees minimum), and clear approach and transitional surfaces at the heliport site. The Heliport Approach Surface for each landing area at a heliport is defined in 14 CFR Part 77 as the area beginning at the end of the take off and landing area with the same width, extending outward and upward for a horizontal distance of 4,000 feet, where its width is 500 feet. The slope of the approach surface rises at a ratio of 8 to 1 (eight feet horizontal to one foot vertical). The Heliport Transitional Surface is defined in 14 CFR Part 77 as that area that extends outwards and upward from the lateral boundaries of the heliport landing and takeoff area and from the Heliport Approach Surfaces for a distance of 250 feet from the centerline of the approach surface. The slope of this surface is 2 to 1.

Design of the heliport landing areas was based on Visual Flight Rules (VFR) operations. However, intermediate and final missed approach design criteria as specified in FAA Order 8260.42A, *Helicopter Global Positioning System Non Precision Approach Criteria*, were considered in the design of the approach lighting area orientation in the event that an Instrument Flight Rules (IFR) approach is desired in the future. The optimum design for an instrument approach includes a three-mile intermediate segment, a 3-mile final approach segment, and a clear missed approach area. Planning data for the proposed Heliport is presented on **Exhibit D-2**.

Generalized Aircraft Flight Tracks

Flight track information is another important input to the INM. However, inputting the individual tracks for each aircraft operation is not practical and the FAA suggests that flight tracks be consolidated into a set of generalized flight tracks that are representative of all flight tracks into and out of the airport/heliport. Deviations from the generalized flight tracks occur because of weather conditions, pilot technique, air traffic control procedures, and aircraft weight. However, the generalized flight tracks do provide representative tracks for arrivals and departures at the airport/heliport.

The potential flight corridors and the local routes for the Heliport site are shown on **Exhibits D-3** through **D-5**. The local routes represent generalized flight paths for transitioning between the site and the flight corridor. Each exhibit depicts the noise model inputs for each flight track scenario within the Proposed Action, including the flight corridors, the percentage of traffic on each corridor, and each local route.

Exhibit D-3, Flight Corridors for Heliport site – Scenario A (Henderson), shows the Henderson departure flight corridor being used 100 percent of the time. Arrivals are split, with 80 percent arriving via the Henderson flight corridor and 20 percent arriving via the Charleston and Strip Railroad flight corridors. Exhibit D-4, Flight Corridors for Heliport Site – Scenario B (McCullough), shows the McCullough departure flight corridor being used 100 percent of the time. Arrivals are split, with 80 percent arriving via the McCullough flight corridor and 20 percent arriving via the Charleston and Strip Railroad flight corridors. Exhibit D-5, Flight Corridors for the Heliport site – Scenario C (Jean), shows the Jean flight corridor being used 100 percent of the time. Arrivals are split, with 80 percent arriving via the Jean flight corridor and 20 percent arriving via the Charleston and Strip Railroad flight corridors.

South of Sloan

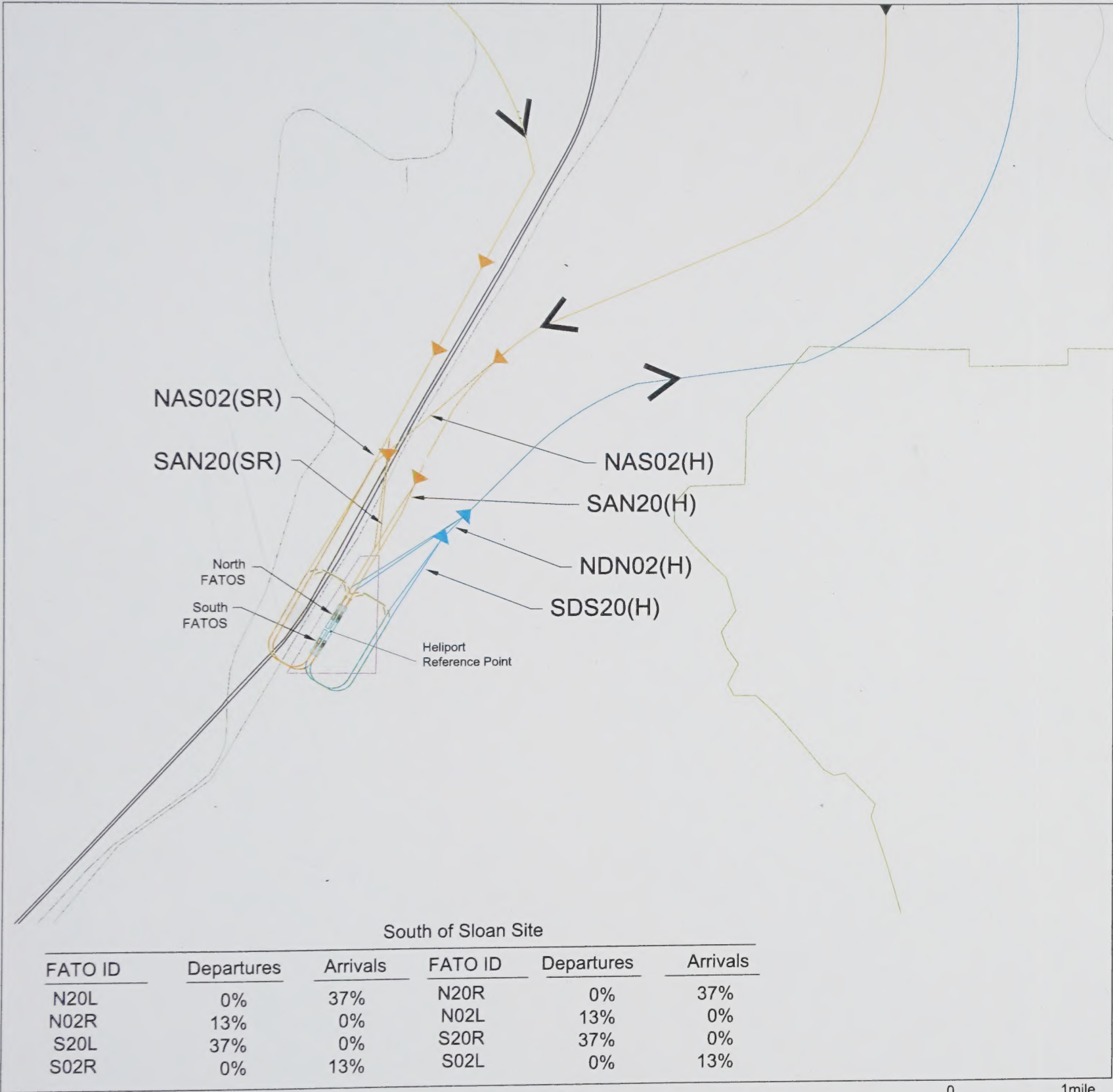
Final Approach and Take Off Area (FATO)	Coordinates in State Plane NAD83 Nevada East X (Easting), Y (Northing)	Coordinates in NAD83 DATUM (converted from State Plane) LAT., LONG.	Coordinates in NAD83 DATUM (rounded to nearest .01 second) LAT., LONG.
North 20L	764785.4452, 26661836.5075	35° 53' 24.50600", 115° 12' 59.82063"	35° 53' 24.51", 115° 12' 59.82"
North 02R	764642.3773, 26661595.8177	35° 53' 22.13088", 115° 13' 01.57044"	35° 53' 22.13", 115° 13' 01.57"
South 20L	764187.3299, 26660830.2705	35° 53' 14.57640", 115° 13' 07.13577"	35° 53' 14.58", 115° 13' 07.14"
South 02R	764044.2620, 26660589.5807	35° 53' 12.20125", 115° 13' 08.88546"	35° 53' 12.20", 115° 13' 08.89"
North 20R	764613.5239, 26661957.2521	35° 53' 25.70655", 115° 13' 01.90466"	35° 53' 25.71", 115° 13' 01.90"
North 02L	764470.4560, 26661698.0091	35° 53' 23.14792", 115° 13' 03.65531"	35° 53' 23.15", 115° 13' 03.66"
South 20R	764015.4086, 26660932.4618	35° 53' 15.59342", 115° 13' 09.22060"	35° 53' 15.59", 115° 13' 09.22"
South 02L	763872.3407, 26660691.7720	35° 53' 13.21825", 115° 13' 10.97028"	35° 53' 13.22", 115° 13' 10.97"
Heliport Reference Point	764414.8536, 26661213.0441	35° 53' 18.35365", 115° 13' 04.35314"	35° 53' 18.35", 115° 13' 04.35"

Sources: Ricondo & Associates, Inc.; Conceptual Heliport Layout Plan, HNTB, January 2007
 Prepared by: Ricondo & Associates, Inc., April 2008

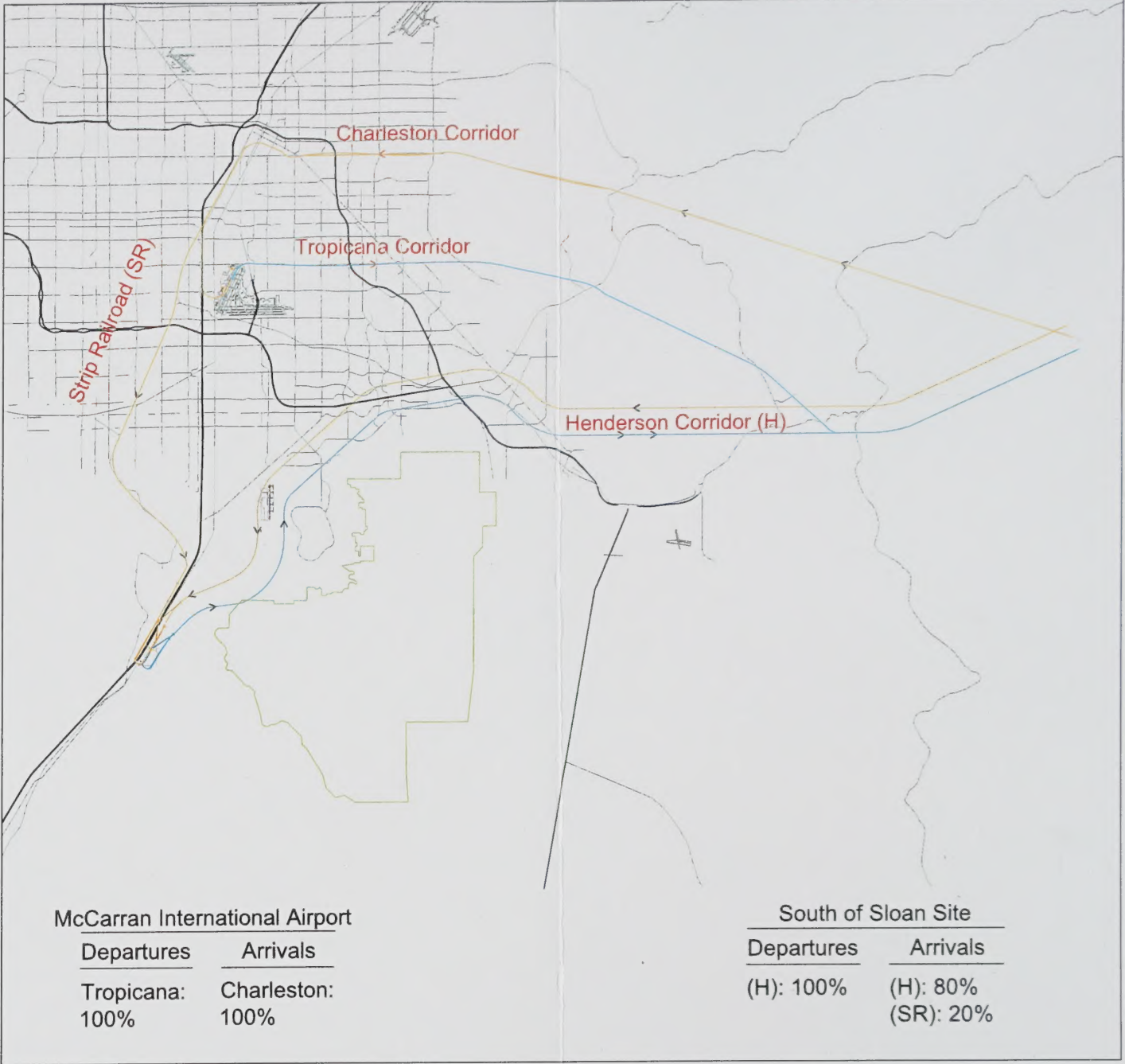
Exhibit D-2

Coordinates

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Sources: Ricondo & Associates, Inc.; ASRC Research and Technology Solutions; Clark County Department of Aviation; FAA Form 7480; Conceptual Heliport Layout Plan, HNTB, January 2007
Prepared by: Ricondo & Associates, Inc., April 2008



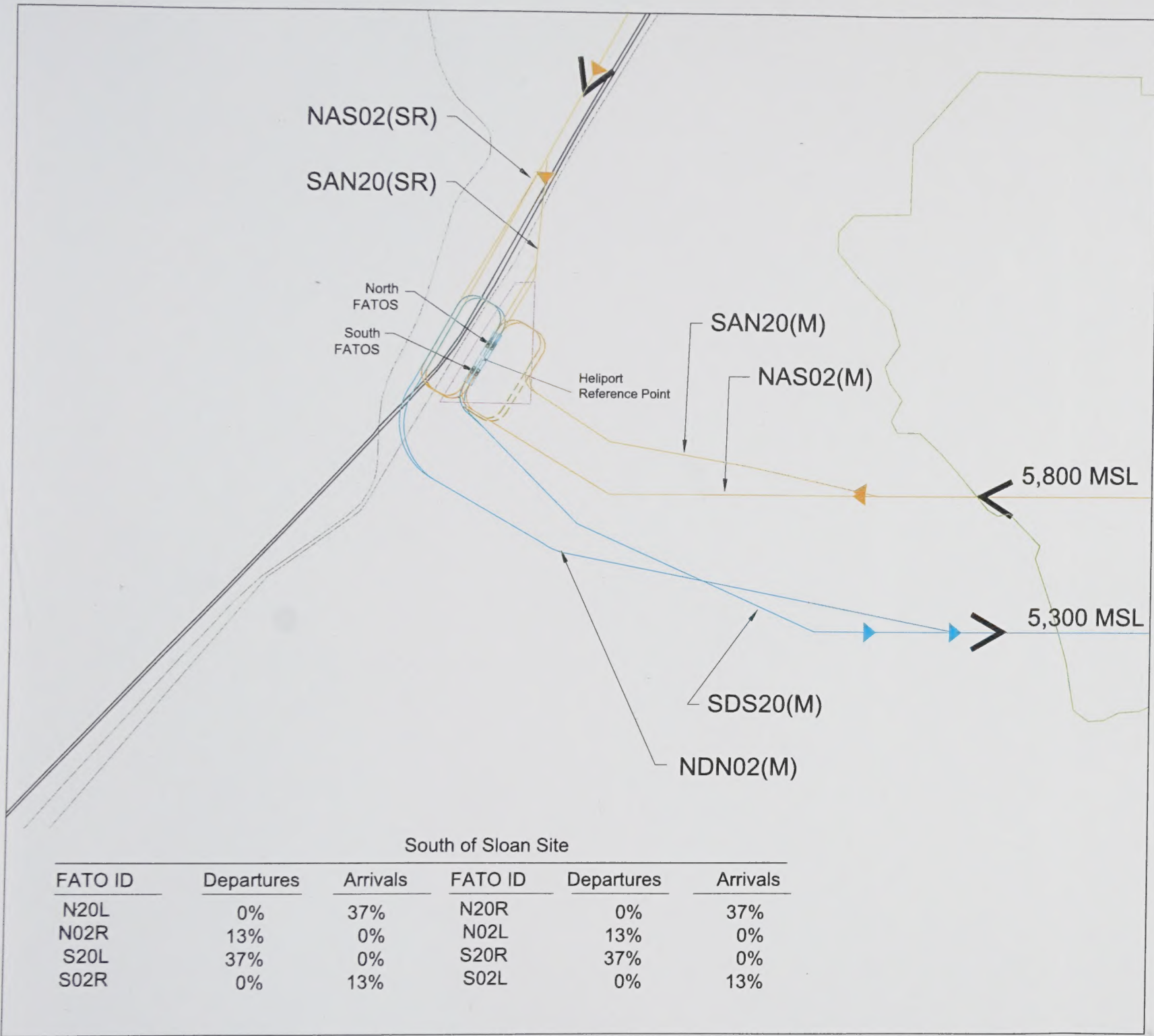
Notes: Nighttime flights (10 pm to 6:59 am): 1%
Heliport elevation per FAA Form 7480: 3,120 feet

Legend

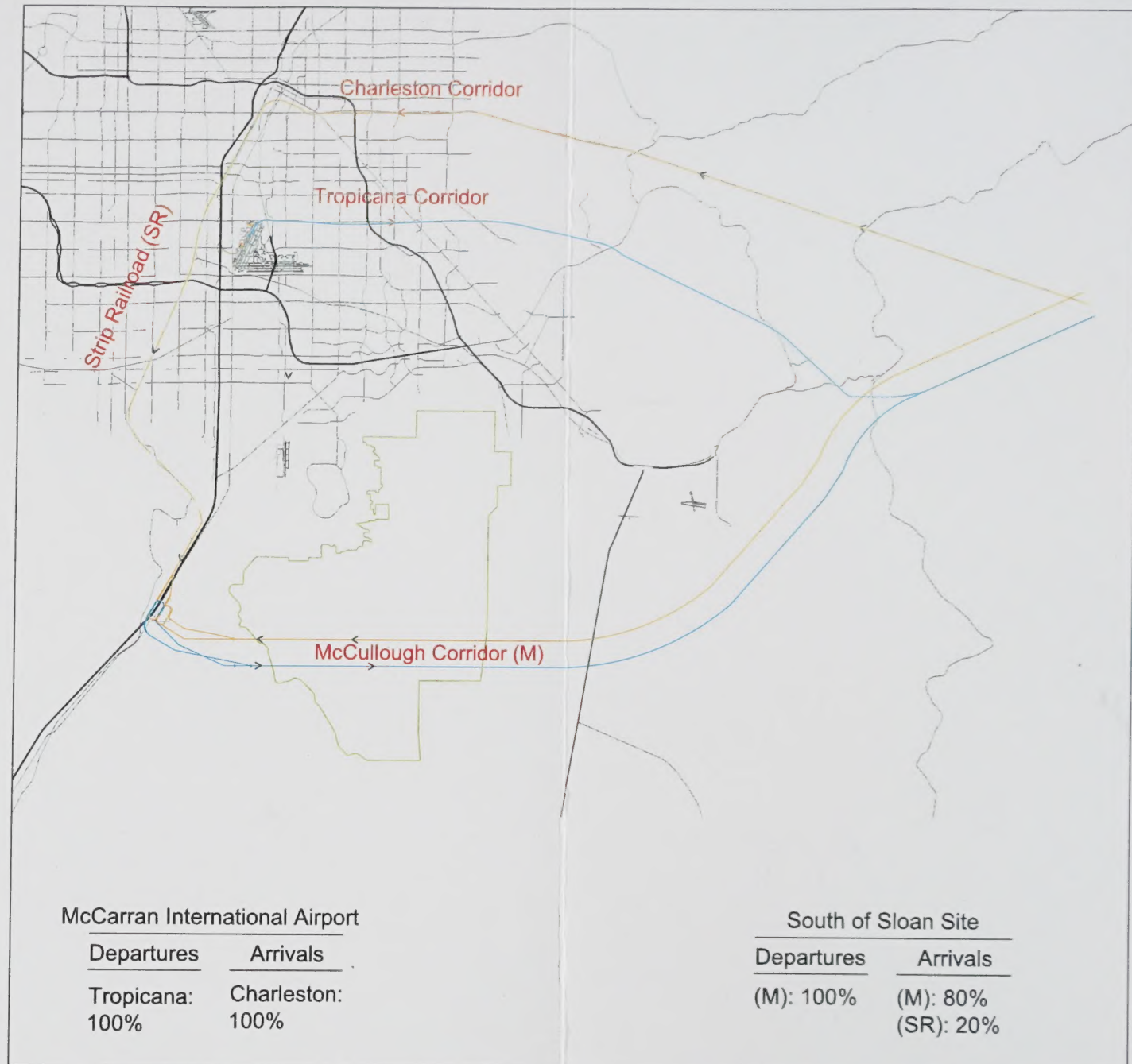
- Sloan Canyon Boundary
- Arrivals
- Departures
- Streets
- Major Roads
- Corridor
- FATO identifier
- Arrivals (A) or Departures (D)
- South Operations (SOPS) or North Operations (NOPS)

Exhibit D-3
**Flight Corridors for South of Sloan Site
Scenario A (Henderson)**

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LOCAL ROUTES



CORRIDORS

Notes: Nighttime flights (10 pm to 6:59 am): 1%
Heliport elevation per FAA Form 7480: 3,120 feet

Legend

- Sloan Canyon Boundary
- Arrivals
- Departures
- Streets
- Major Roads

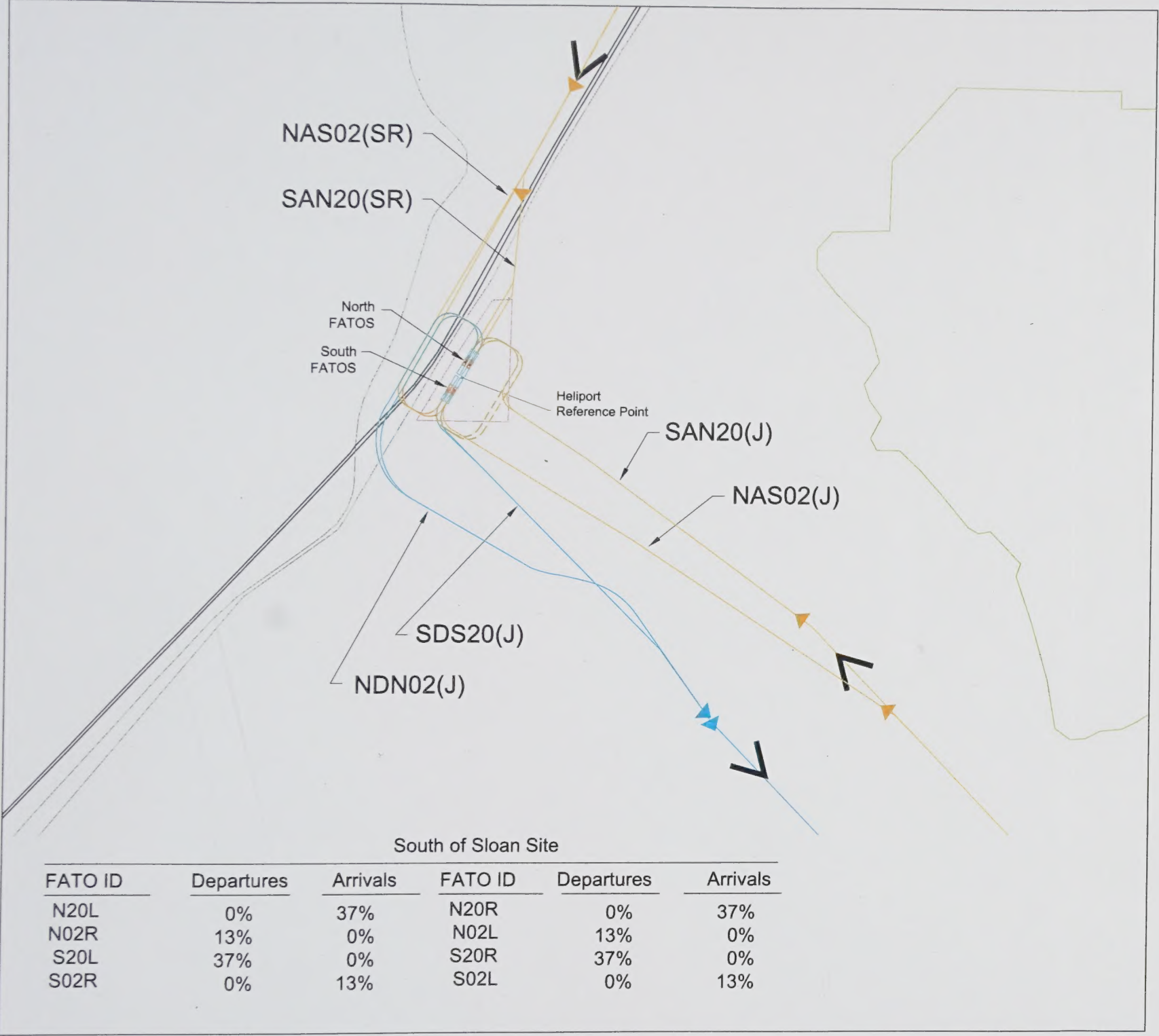
S A N20 (M)
Corridor
FATO identifier
Arrivals (A) or
Departures (D)
South Operations (SOPS) or
North Operations (NOPS)

Sources: Ricondo & Associates, Inc.; ASRC Research and Technology Solutions; Clark County Department of Aviation; FAA Form 7480; Conceptual HLP, HNTB, January 2007
Prepared by: Ricondo & Associates, Inc., April 2008



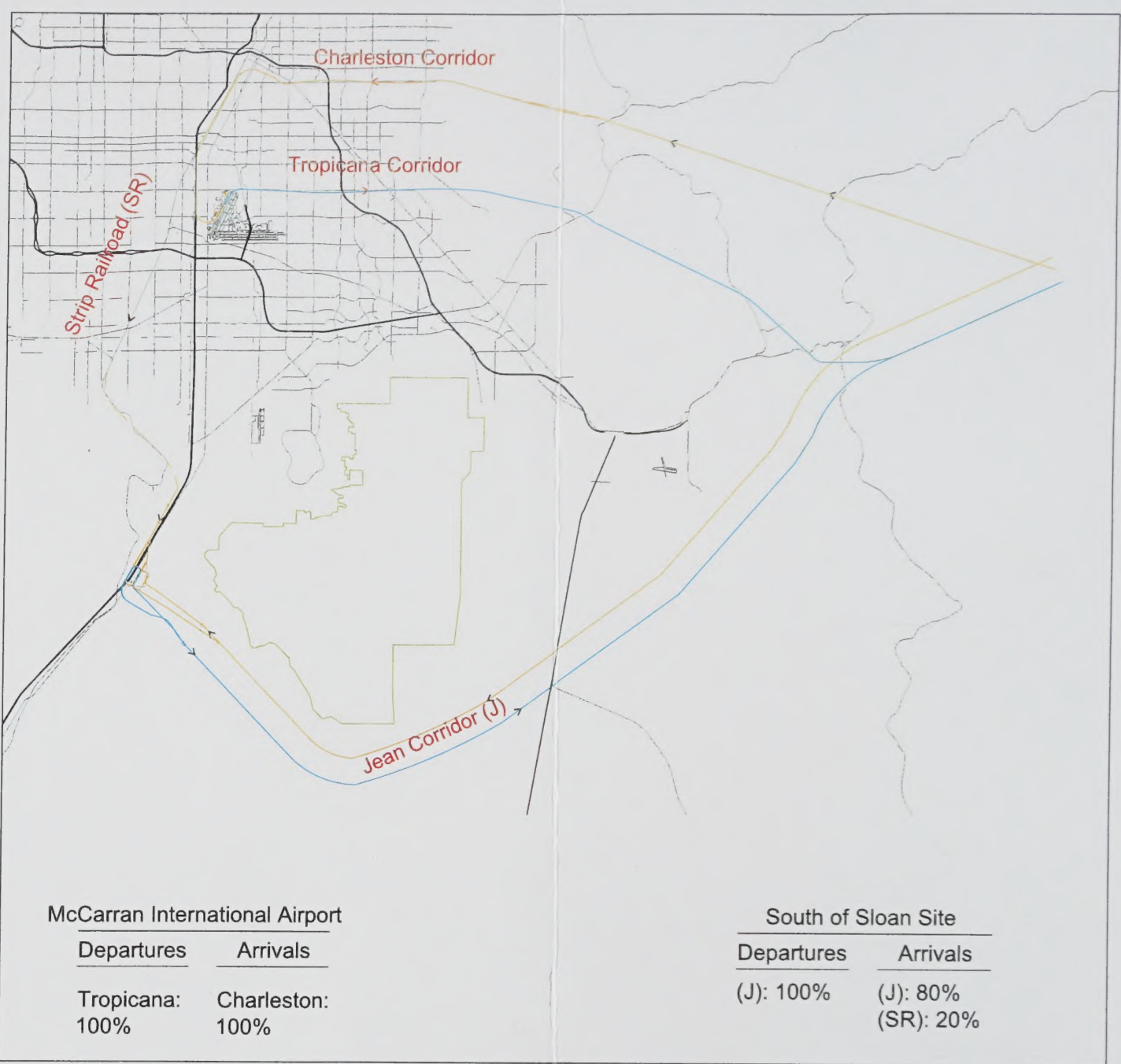
Exhibit D-4
**Flight Corridors for South of Sloan Site
Scenario B (McCullough)**

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South of Sloan Site					
FATO ID	Departures	Arrivals	FATO ID	Departures	Arrivals
N20L	0%	37%	N20R	0%	37%
N02R	13%	0%	N02L	13%	0%
S20L	37%	0%	S20R	37%	0%
S02R	0%	13%	S02L	0%	13%

LOCAL ROUTES



McCarran International Airport		South of Sloan Site	
Departures	Arrivals	Departures	Arrivals
Tropicana: 100%	Charleston: 100%	(J): 100%	(J): 80% (SR): 20%

CORRIDORS

Notes: Nighttime flights (10 pm to 6:59 am): 1%
Heliport elevation per FAA Form 7480: 3,120 feet

Legend

- Sloan Canyon Boundary
- Arrivals
- Departures
- Streets
- Major Roads

S A N20 (J)

Corridor

FATO identifier

Arrivals (A) or Departures (D)

South Operations (SOPS) or North Operations (NOPS)

Sources: Ricondo & Associates, Inc.; ASRC Research and Technology Solutions; Clark County Department of Aviation; FAA Form 7480; Conceptual HLP, HNTB, January 2007
Prepared by: Ricondo & Associates, Inc., April 2008



Flight Corridors for South of Sloan Site
Scenario C (Jean)

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D.4 Ambient Noise Level Monitoring

The ambient noise environment in the vicinity of McCarran International Airport and the Heliport site and in the vicinity of potential helicopter flight corridors associated with each site was evaluated through a noise-monitoring program. Continuous noise monitoring for a minimum of 24 hours was conducted at 10 locations³ as shown on Exhibit III-5 in Chapter III. Two of the noise-monitoring sites represent alternative heliport sites, noted as McCarran International Airport and South of Sloan (Proposed Action), and eight of the noise monitoring sites are located underneath or near existing or potential helicopter flight corridors, noted as R1 through R8. **Exhibits D-6 through D-15** summarize the hourly L_{max} , L_{eq} , and L_{90} noise levels measured at each site, along with the measured DNL for the 24-hour noise-monitoring period. A photograph of each noise monitoring site and the noise monitoring equipment set up at each site is included with each exhibit. The exhibits demonstrate that noise levels vary during the day and night, with the lowest noise levels generally occurring during the late night and early morning hours.

Ambient noise level measurements were recorded during July and October 2004. Noise monitoring equipment consisted of Larson-Davis Laboratories (LDL) Model 820 sound level analyzers equipped with Bruel & Kjaer (B&K) Type 4176 0.5-inch microphones. The instrumentation was calibrated prior to use with a B&K Type 4230 acoustic calibrator, and complies with applicable requirements of the American National Standards Institute (ANSI) for Type 1 (precision) sound level meters.

The LDL Model 820 sound level analyzers run continuously with a sampling rate of 32 per second. The analyzers calculate various statistical descriptors of noise and DNLs for each 24-hour noise measurement period. As discussed previously, DNL is the average sound pressure level in A-weighted decibels for an average day of the year. DNL is calculated using the sound energy generated by individual aircraft operations (arrivals or departures), the number of operations occurring during a theoretical average 24-hour period, and the time of day the operations occur. A 10-dB weighting penalty is added for aircraft or helicopter operations occurring between 10:00 p.m. and 6:59 a.m.

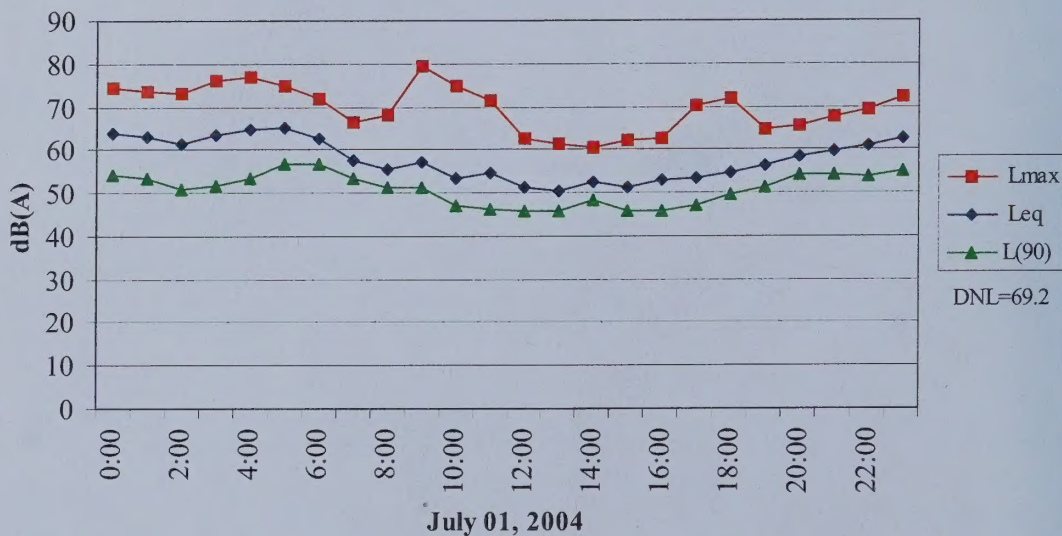
In addition to the 10 sites noted above, ambient noise monitoring data from two locations beneath the Overflight Area, from an unrelated project conducted by the Federal Aviation Administration⁴, was also evaluated. These two noise monitoring sites, noted as L05 and L07, are also shown on Exhibit II-5 in Chapter III. **Exhibits D-16 through D-17** summarize the average hourly L_{eq} and L_{90} noise levels measured by the FAA at each site, along with the estimated DNL for the noise-monitoring period. DNL values were estimated based upon average hourly L_{eq} data from the above-referenced FAA study since measured DNL values were not reported in that document. A photograph of FAA sites L05 and L07 and the noise monitoring equipment setup at each of those sites is included with the exhibits. The exhibits demonstrate that noise levels vary during the day and night, with the lowest noise levels generally occurring during the late night and early morning hours.

3 Noise monitoring sites were selected by Brown-Buntin Associates, Inc. with input from the CCDOA and the Bureau of Land Management.

4 FAA, *Baseline Ambient Sound Levels in Lake Mead National Recreation Area (DOT-VNTSC-FAA-06-13*, April 2006.



South of Sloan Site
Hourly Noise Levels



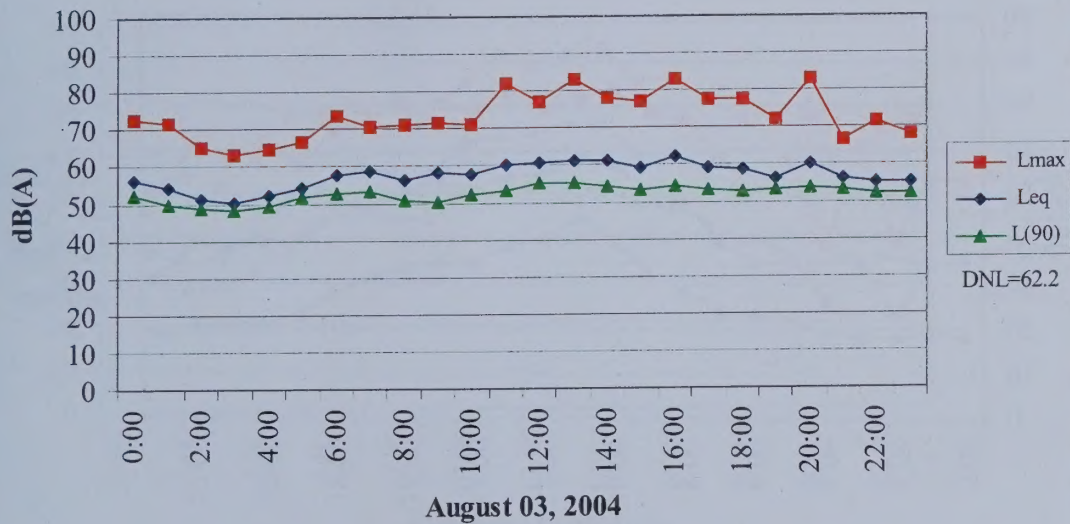
Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-6

Ambient Noise Monitoring Results South of Sloan Site



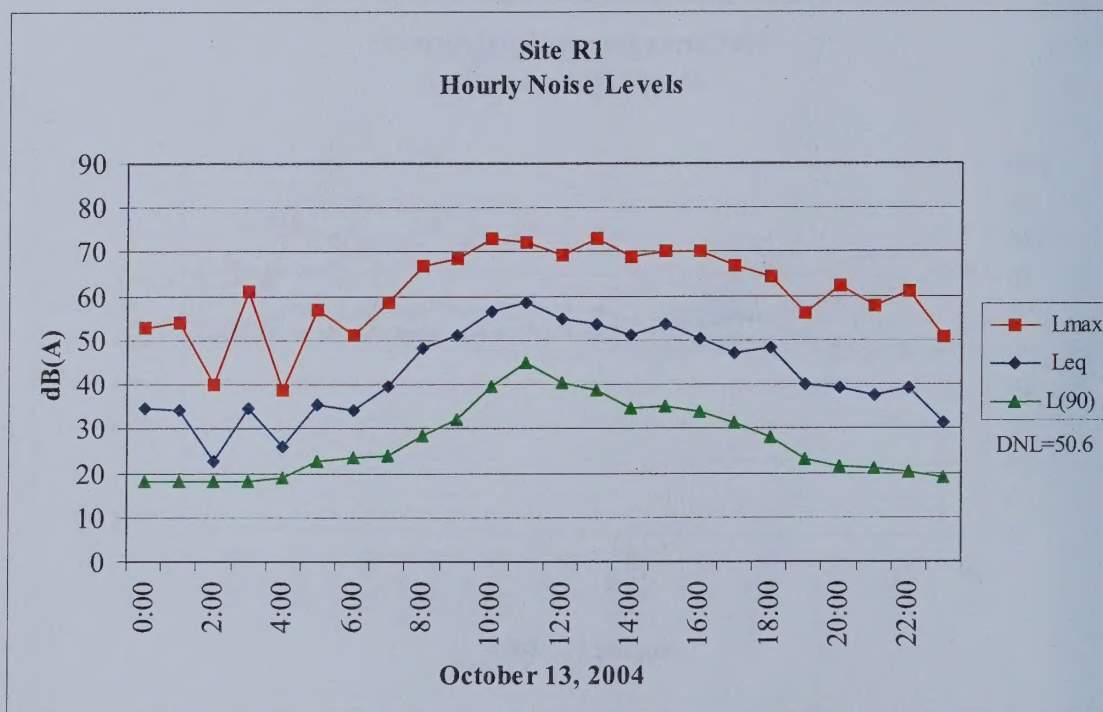
McCarran International Airport
Hourly Noise Levels



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-7

Ambient Noise Monitoring Results McCarran International Airport



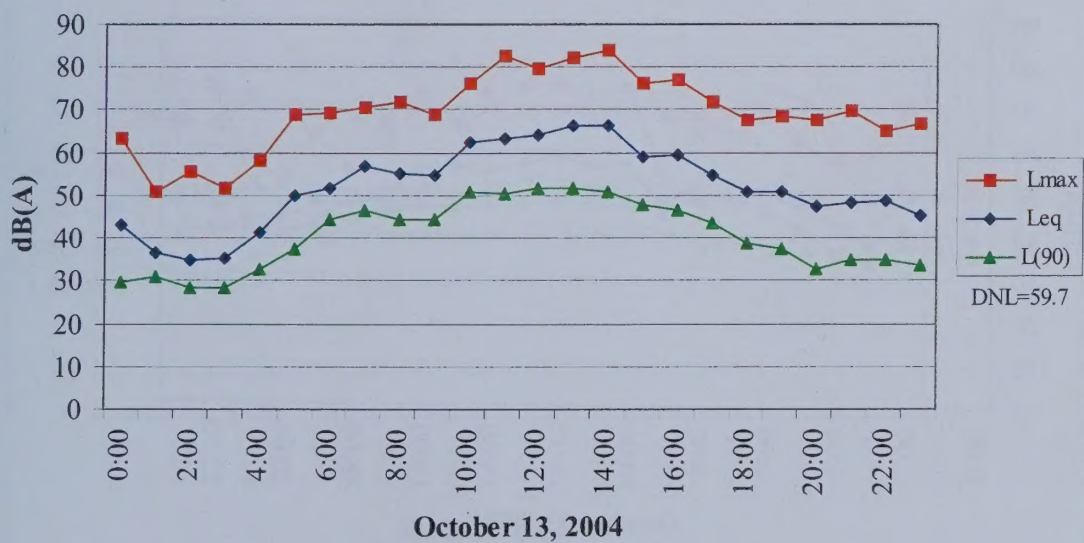
Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-8

Ambient Noise Monitoring Results Site R1



Site R2
Hourly Noise Levels



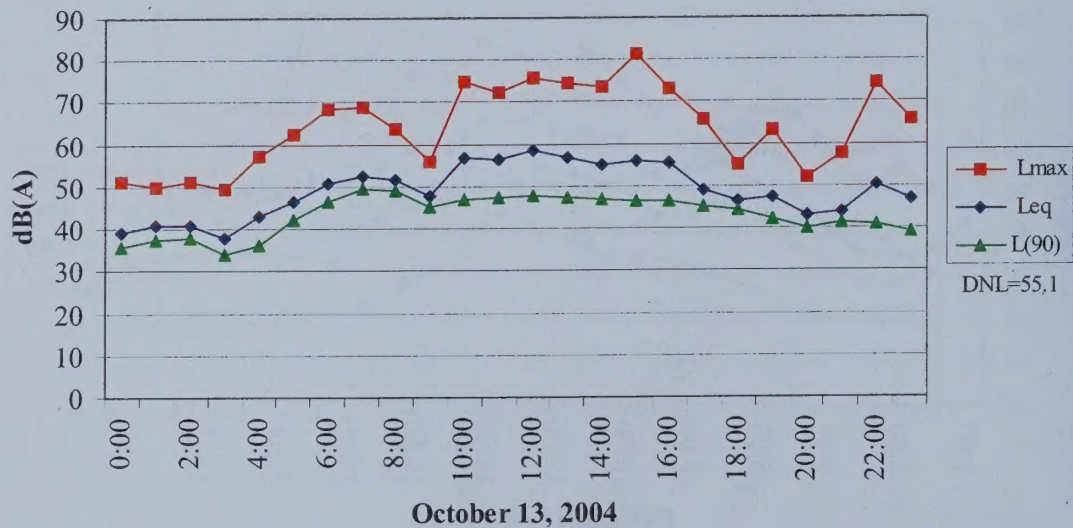
Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-9

Ambient Noise Monitoring Results Site R2



Site R3
Hourly Noise Levels



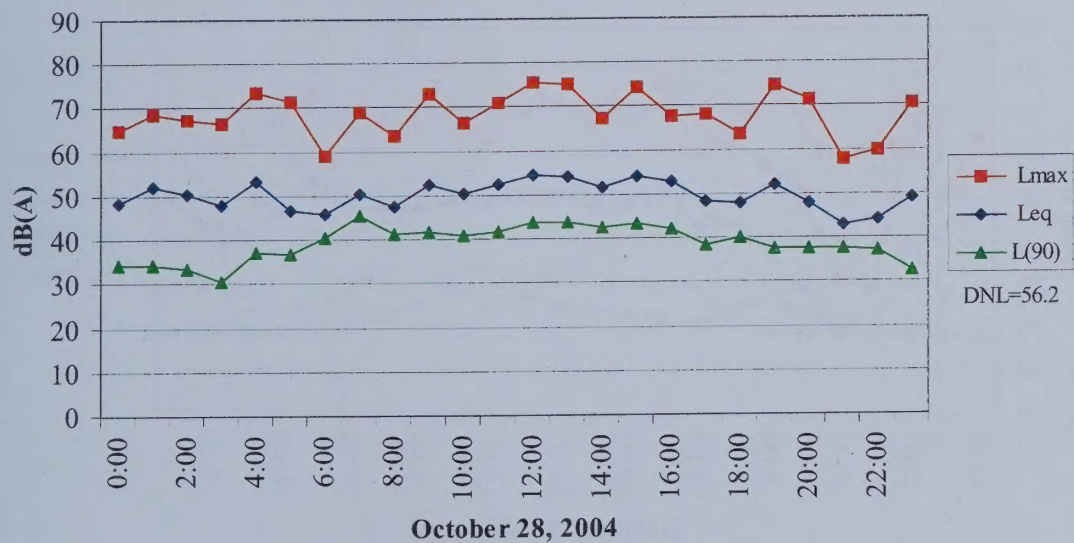
Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-10

Ambient Noise Monitoring Results Site R3



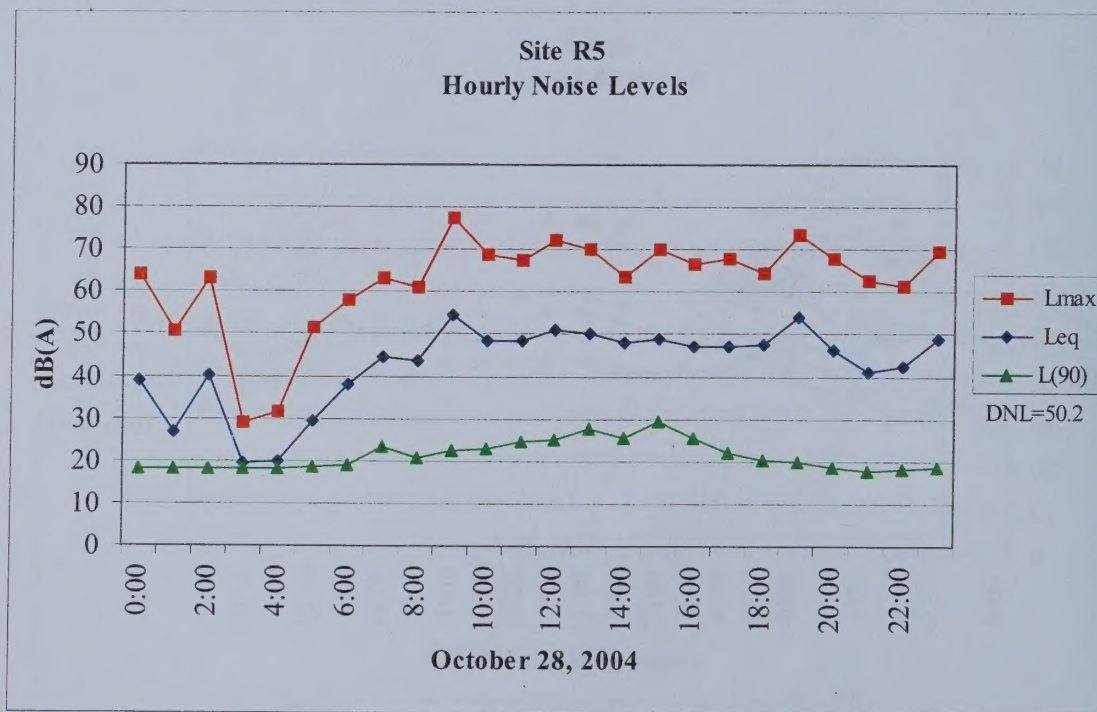
Site R4
Hourly Noise Levels



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-11

Ambient Noise Monitoring Results Site R4



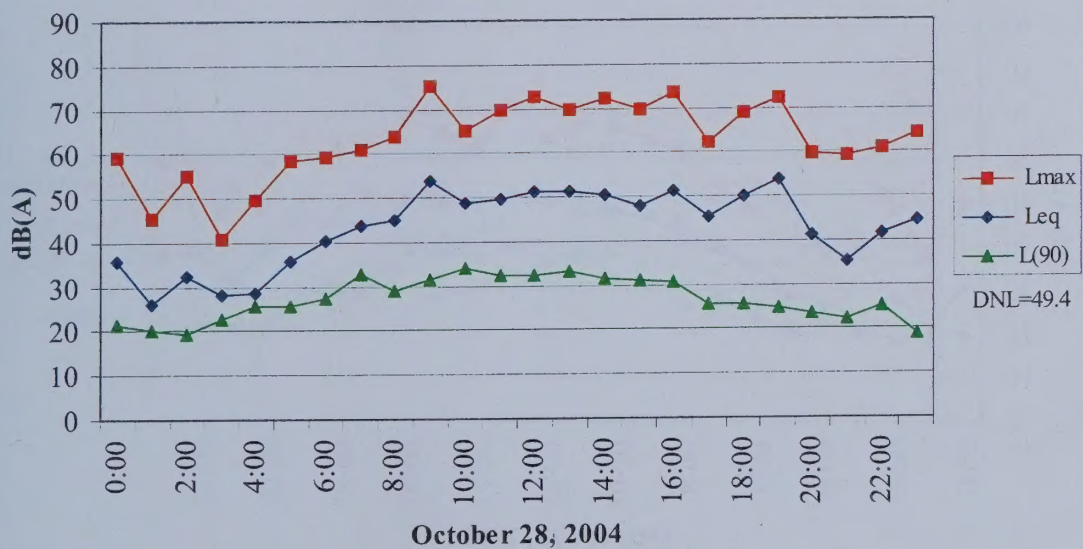
Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-12

Ambient Noise Monitoring Results Site R5



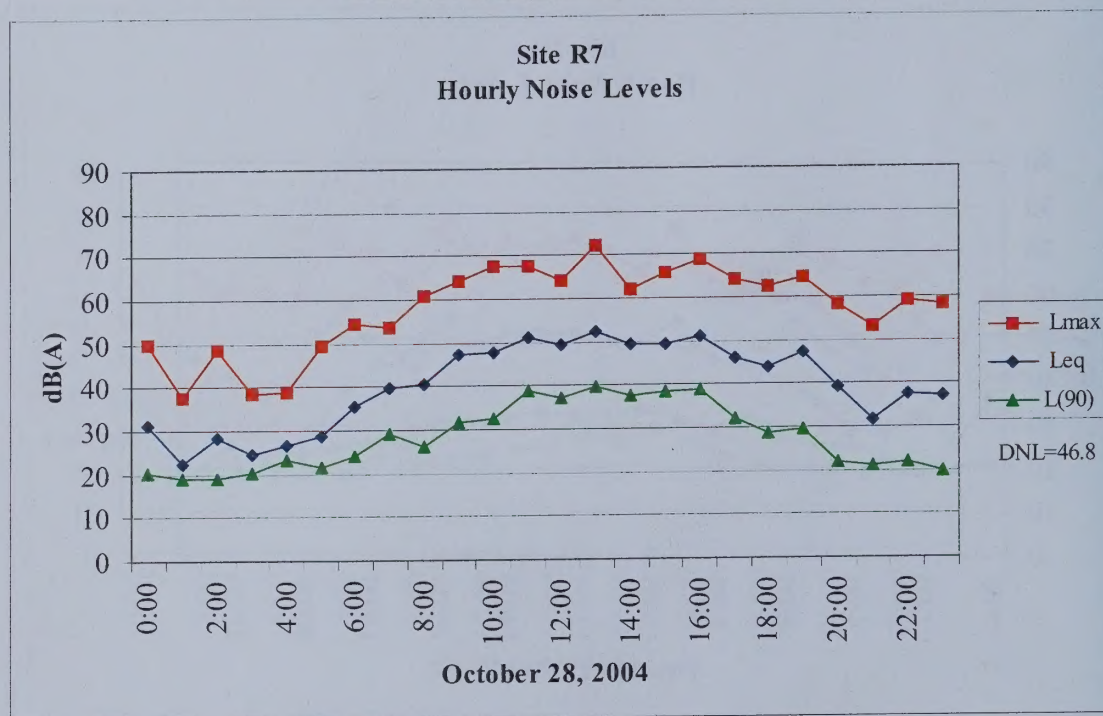
Site R6
Hourly Noise Levels



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-13

Ambient Noise Monitoring Results Site R6



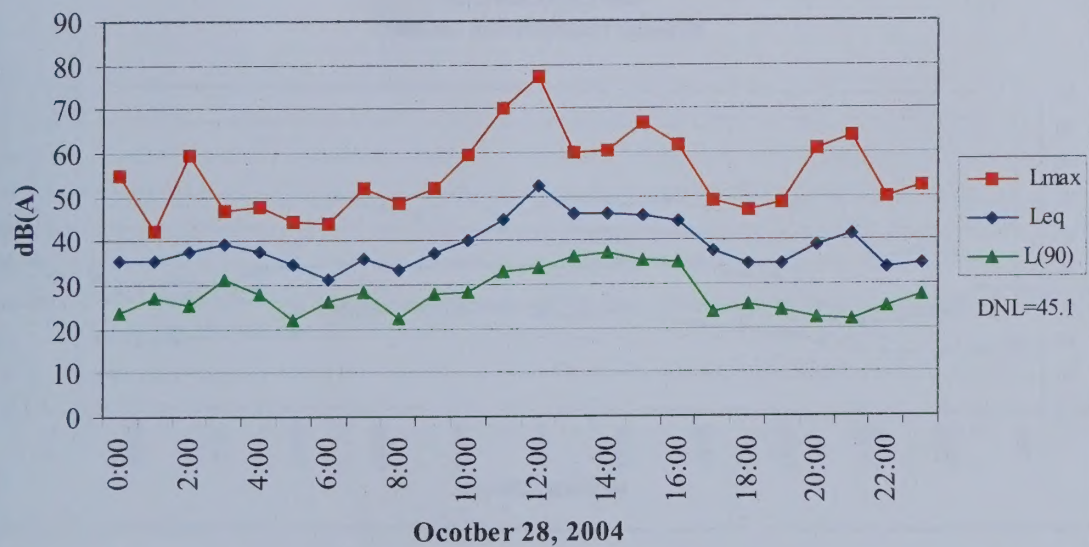
Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-14

Ambient Noise Monitoring Results Site R7



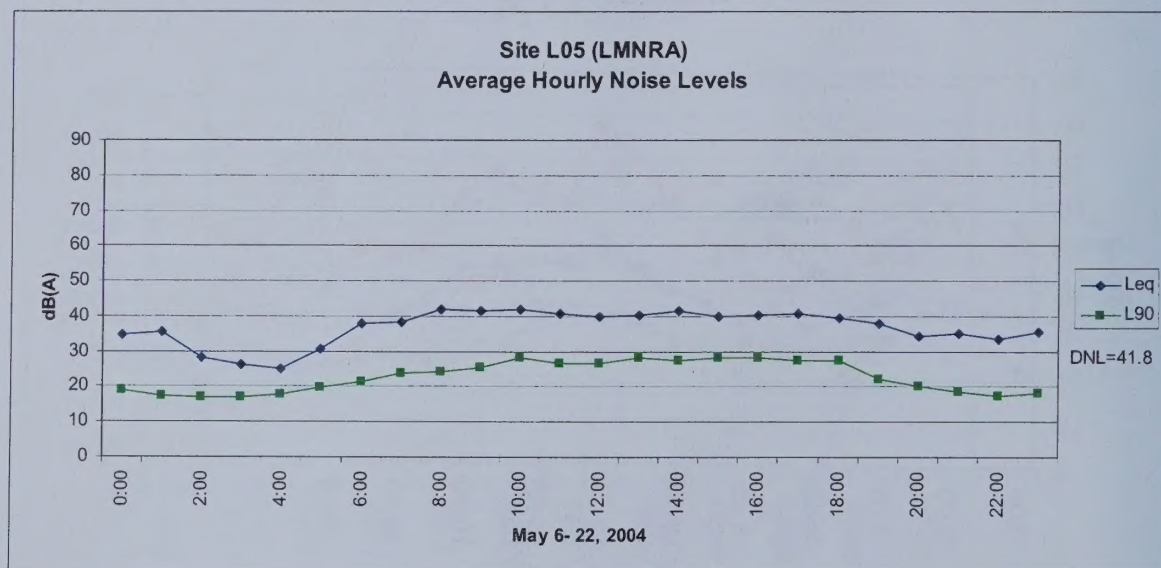
Site R8
Hourly Noise Levels



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., April 2008

Exhibit D-15

Ambient Noise Monitoring Results Site R8



Source: Baseline Ambient Sound Levels in Lake Mead National Recreation Area

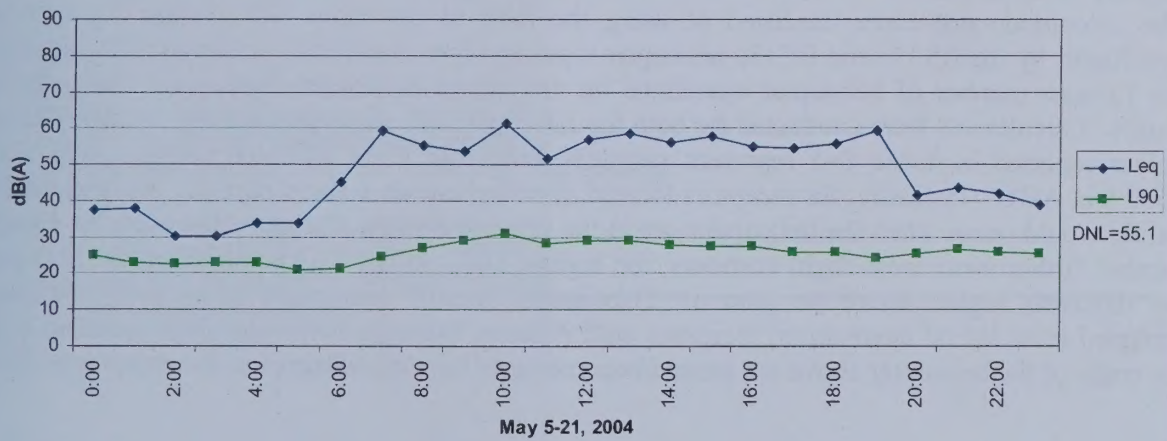
Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., December 2008

Exhibit D-16

Ambient Noise Monitoring Results Site L05



Site L07 (LMNRA)
Average Hourly Noise Levels



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates, Inc., December 2008

Exhibit D-17

Ambient Noise Monitoring Results Site L07

D.5 Noise Grid Analysis for Locations of Interest (LOIs)

Cumulative noise exposure near existing and potential helicopter flight corridors was evaluated for the ten noise monitoring locations described in Section D.4, including FAA sites L05 and L07, and at seven supplemental locations representing noise-sensitive locations in the region, such as residential areas, schools, recreation areas, and potential animal habitats. These locations, referred to as grid points, are shown on Exhibit IV-5 in Chapter IV. **Table D-5** indicates the land use or receptor represented by the grid points, and summarizes the ranges of predicted helicopter noise exposure for each grid point. These ranges in noise exposure were determined using the INM, and represent helicopter activity levels that would occur under the Proposed Action or No Action alternative. Helicopter noise levels are reported in terms of cumulative (DNL) and single-event ($L_{\max}$) exposure. The $L_{\max}$ is considered a supplementary noise metric, and $L_{\max}$ values are reported for informational purposes.

Noise exposure underneath or near the existing and potential helicopter flight corridors is dependent partly on the altitude at which the helicopters would be flown. For the purposes of the noise analysis, the lowest altitude analyzed for helicopter flight corridors was 300 feet AGL. This is the minimum altitude above the ground required by 14 CFR Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft*.

According to the air tour operators, the minimum expected vertical distance between the helicopters and the terrain along the routes during Grand Canyon helicopter air tours would be 500 feet when feasible. This would be a voluntary action on the part of the air tour operators.⁵

Helicopter DNL values were calculated at the reference grid points using Version 7.0 of the INM. The calculation procedure consisted of using the INM to determine SEL values for individual overflights by the AS350 and EC130 helicopter types and then combining predicted SEL values with the forecast number of helicopter operations on the closest helicopter flight corridors to the grid points. Calculations were conducted for both the 2011 and 2017 helicopter activity levels. The DNL values reported in Table D-5 represent potential helicopter flight altitudes ranging from 300 to 1500 feet AGL. Typically, for receptors located directly beneath a flight corridor, the highest DNL values would occur when the helicopters are at the lowest potential altitude. However, for receptors located farther away from flight corridors, the highest DNL values may occur when the helicopters are relatively higher above the ground. This occurs because absorption of noise by the ground (referred to as lateral attenuation) increases with distance from the helicopter flight corridor and as the angle of the helicopter above the ground becomes smaller with reference to the receptor location.

⁵ 14 CFR Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft*, requires a minimum altitude of 300 feet AGL for helicopter operations when over congested areas; however, the Grand Canyon helicopter tour operators currently attempt to achieve a minimum altitude of 500 feet AGL.

Table D-5

Summary of Helicopter Noise Levels at Locations of Interest

Grid Point ^{1/}	Representative Land Use	Nearest Helicopter Flight Corridor(s) ^{2/}	Distance to Nearest Flight Corridor(s) (feet)	Measured Ambient Noise Level (DNL) ^{3/}	Predicted Helicopter Noise Levels (DNL) No Action Alternative ^{7/}		Predicted Helicopter Noise Levels (DNL) Proposed Action ^{7/}		Predicted Single Event Helicopter Noise Levels (L _{max}) ^{4/}	
					2011	2017	2011	2017	EC130	SA350D
R1	Recreation area (trail)	Charleston	0	50.6	44-53	45-55	39-49	40-50	61-78	65-80
R2	Abandoned mine	Tropicana	3,310	59.7	34-37	34-38	29-32	30-33	47-53	51-59
R3	Undeveloped land	Henderson (Inbound/Outbound)	7,600/2,340	55.1	n.a.	n.a.	39-43	40-43	53-58	55-62
R4	Undeveloped land	Henderson (Inbound/Outbound)	21,580/16,330	56.2	n.a.	n.a.	<25	<25	<35	<35
R5	Sloan Canyon petroglyphs	McCullough (Inbound/Outbound)	8,110/13,520	50.2	n.a.	n.a.	26-28	26-29	31-37	36-43
R6	Wilderness area with hiking trails	McCullough (Inbound/Outbound)	2,580/2,580	49.4	n.a.	n.a.	40-43	40-44	51-56	54-60
R7	Wilderness area with hiking trails	Jean (Inbound/Outbound)	3,170/2,090	46.8	n.a.	n.a.	42-44	42-44	55-59	57-63
R8	Electric power substation	Jean (Inbound/Outbound)	1,810/3,410	45.1	n.a.	n.a.	42-43	43-45	46-52	51-57
G1	Residential/school area	Charleston	5,300	n.a.	27-33	28-34	22-28	22-28	39-45	44-51
G2	Recreation area (campsite)	Tropicana	1,430	n.a.	43-47	44-48	38-43	39-43	59-66	62-69
G3	Residential area	Henderson (Inbound/Outbound)	8,080/2,880	n.a.	n.a.	n.a.	36-40	36-40	49-55	52-59
G4	Recreation area (trail)	Henderson (Inbound/Outbound)	22,420/17,110	n.a.	n.a.	n.a.	<25	<25	<35	<35
G5	Wilderness/habitat area	McCullough (Inbound/Outbound)	3,320/8,730	n.a.	n.a.	n.a.	33-37	33-37	47-53	51-57
G6	Wilderness/habitat area	Jean (Inbound/Outbound)	8,200/13,580	n.a.	n.a.	n.a.	26-28	26-29	31-37	36-43
G7	Residential area	Strip Railroad	0	n.a.	n.a.	n.a.	37-47	38-48	61-78	65-80
L05 ^{5/}	Semi-primitive/natural	McCullough/Jean (Outbound)	2,440	41.8 ^{6/}	n.a.	n.a.	36-41	36-42	53-58	55-62
L07 ^{5/}	High use	Charleston	1,100	55.1 ^{6/}	43-48	44-49	38-44	39-45	60-70	63-73

Notes:

n.a. = Not applicable

DNL = Day-night average sound level, expressed in A-weighted decibels

1/ Grid point locations are shown on Exhibit IV-5. Noise measurements were conducted at Sites R1 through R8 and Sites L05 and L07 in 2004.

2/ Existing and potential helicopter flight corridors are shown on Exhibit IV-5.

3/ Ambient noise level data are from Table III-2. Sites G1-G7 are supplemental grid point locations where noise levels were calculated using the INM. Ambient noise measurements were not conducted at those locations.

4/ Predicted L_{max} values are shown as a range for individual overflights by the SA350D and EC130 helicopter types at altitudes ranging from 300 feet to 1500 feet above the observer location (grid point).5/ FAA ambient noise monitoring site and data as described in *Baseline Ambient Sound Levels in Lake Mead National Recreation Area* (DOT-VNTSC-FAA-06-13), April 2006.6/ DNL values estimated from hourly L_{eq} data measured by the FAA as referenced in Note 5 above.

7/ Predicted DNL values are for potential helicopter flight altitudes ranging from 300 feet to 1500 feet above the observer location (grid point).

Source: Brown-Buntin Associates, Inc.

Prepared by: Ricondo & Associates, Inc., December 2008

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Based on the INM grid point analysis, it is expected that the highest DNLs would occur at the grid points closest to the existing or potential helicopter flight corridors. The highest DNLs would occur at grid points R1 (recreation area/trail) and G7 (residential area). The lowest DNLs (less than 25 dBA) would occur at grid points R4 (undeveloped land) and G4 (recreation area/trail). At all grid points, calculated helicopter DNLs are predicted to be below the FAA's DNL 65 significance threshold. In addition, at Sites R1 through R8, and FAA Sites L05 and L07, predicted DNLs from helicopter operations alone under the Proposed Action for 2011 and 2017 are anticipated to be comparable to or less than existing DNL values as measured during ambient noise level monitoring at the same locations in 2004. Similarly, the highest helicopter L_{max} noise levels would also occur at grid points R1 and R7 and the lowest helicopter L_{max} noise levels would also occur at grid points R4 and G4.

D.6 Helicopter Single Event Noise Level Measurements

Noise from individual helicopter overflights, coordinated directly with the pilot in command to ensure a valid "fly-by" noise event was captured, was measured at seven of the eight ambient noise monitoring locations discussed in Section D.4. These locations are the same as those used to document existing ambient noise levels from all sources affecting the proposed Heliport site, but the "fly-by" noise assessment focused on direct helicopter overflight noise levels. These individual (or "fly-by") monitoring sites are shown on Exhibit IV-5.

At sites near existing air tour routes (Sites R1 and R2), single event noise was measured during normal scheduled air tour operations. Single event noise was measured during pre-arranged test flights at Sites R4 through R8. (Single event noise was not measured at Site R3 because test flights could not be scheduled that would work within constraints imposed by ongoing fixed wing operations at Henderson Executive Airport. It is believed that single event noise levels at Site R3 are adequately represented by measurements at Sites R1, R2, and R4.)

Table D-6 summarizes the results of the single event helicopter noise monitoring at Sites R1 through R8. The mean (average) and range of measured maximum noise (L_{max}) and SELs for the observed helicopter flights are presented in the table. Table D-6 indicates that mean SELs for measured helicopter noise events ranged from approximately 57 to 85 dBA, and that mean L_{max} values for measured helicopter noise events ranged from approximately 43 to 76 dBA. The variability in measured noise levels was primarily caused by differences in the distance between helicopter flight routes and individual monitoring sites. The highest noise levels were recorded at Sites R6, R7, and R8, where helicopters consistently flew almost directly overhead during the test flights. The lowest noise levels were recorded at Site R5 (Sloan Canyon petroglyphs), where the closest potential helicopter flight corridor is more than a mile to the north.

Table D-6

Summary of Measured Single Event Noise Levels of Helicopter Overflights

Site ^{1/}	Helicopter Type	Number Sampled	L _{max} , (dBA) Average (Range)	SEL (dBA) Average (Range)	Azimuth ^{2/} (Degrees)
R1	AS350	11	58.3 (53.2-65.3)	72.1 (65.3-76.3)	45-90
R2	AS350	16	67.2 (59.9-70.0)	77.3 (69.7-79.7)	60-90
	EC130	2	68.9 (68.0-69.8)	77.7 (77.5-77.8)	90
R4	AS350	5	69.3 (68.3-70.2)	79.6 (79.0-80.5)	45-60
	EC130	5	67.8 (66.3-68.3)	77.7 (76.7-78.3)	45-60
R5	AS350	5	48.5 (44.5-50.2)	59.4 (55.9-61.5)	30
	EC130	5	46.9 (42.6-48.5)	56.9 (51.8-58.1)	30
R6	AS350	10	70.6 (67.9-73.6)	81.9 (79.0-84.4)	60-90
	EC130	5	67.3 (64.2-69.5)	77.1 (74.7-78.0)	75
R7	AS350	5	74.9 (72.3-76.4)	85.1 (83.6-86.4)	90
R8	AS350	6	70.2 (67.5-73.8)	81.7 (78.5-84.2)	60-75

Notes:

L_{max} = The maximum A-weighted sound level (L_{max}) is the loudest part of a noise event, measured in decibels. As an aircraft passes an observer overhead, the noise increases to a maximum level and then decreases.

SEL = Sound exposure level (SEL) is a time-integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second.

1/ Designations correspond to the monitoring site locations shown on Exhibit IV-5.

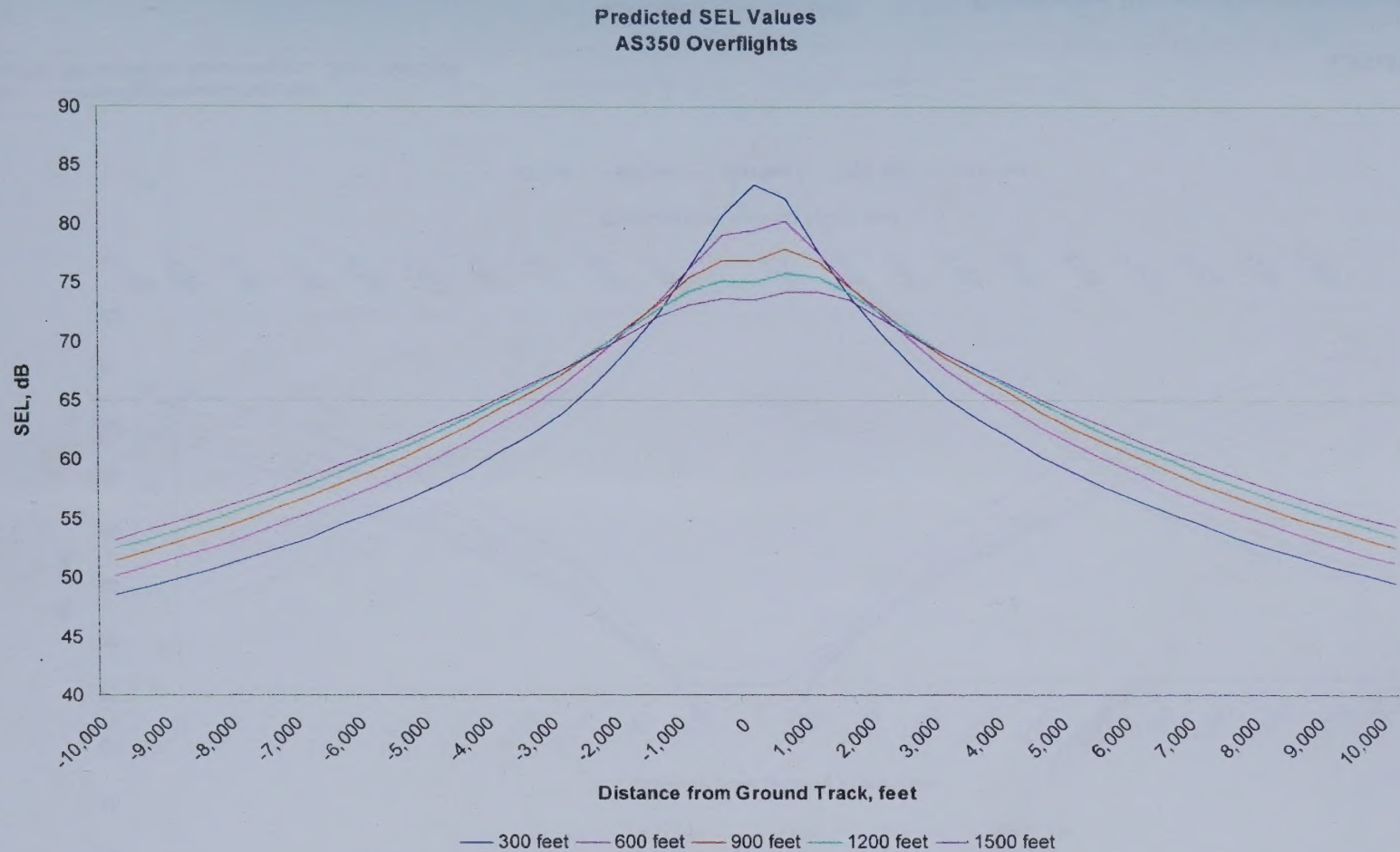
2/ The azimuth is the angle between the aircraft flight path and the microphone at the point when the aircraft is closest to the microphone. An azimuth of 90 degrees means that the aircraft passed directly over the microphone.

Source: Brown-Buntin Associates, Inc., January 2005

Prepared by: Ricondo & Associates, Inc., December 2008

D.7 Predicted Single Event Noise Levels Beneath or near Helicopter Flight Tracks

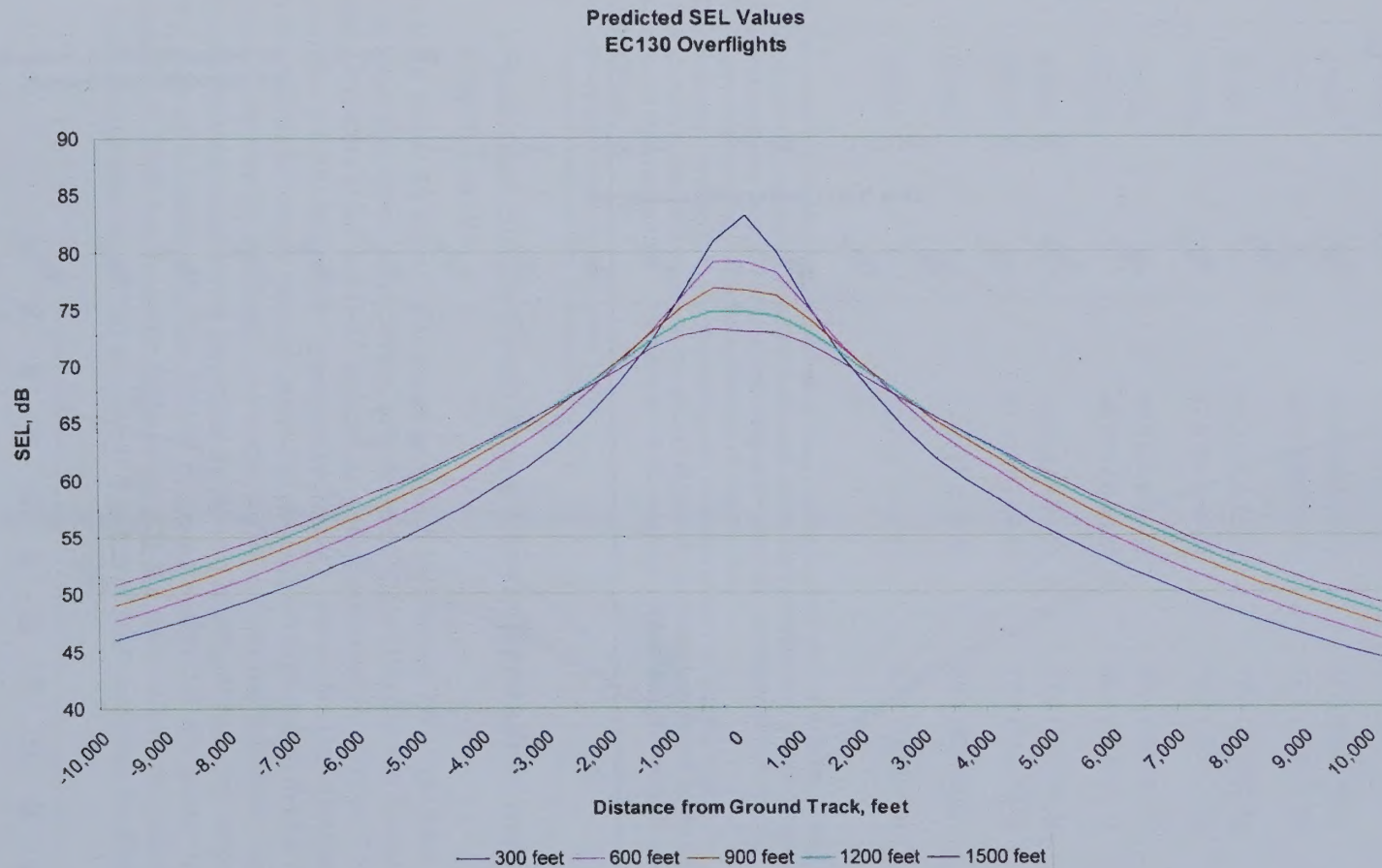
Exhibits D-18 and **D-19** depict SEL values predicted by Version 7.0 of the INM for the AS350 and the EC130 helicopter types, respectively, at a range of flight altitudes and lateral distances from the flight route. **Exhibits D-20** and **D-21** depict L_{max} values predicted by Version 7.0 of the INM for the AS350 and the EC130 helicopter types, respectively. Based on the information shown on the exhibits, the AS350 helicopter registers approximately 0.2 dB higher than the EC130 helicopter when the helicopters are directly overhead. As lateral distance from the helicopter flight route increases, the difference between noise levels generated by the two helicopter types becomes more pronounced. On the left side of the helicopter, the EC130 is approximately 1.0 dB quieter than the AS350 at a lateral distance of 3000 feet from the flight route. On the right side of the helicopter, the EC130 is about 3.5 dB quieter than the AS350 at a lateral distance of 3000 feet from the flight route.



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates Inc., December 2008

Exhibit D-18

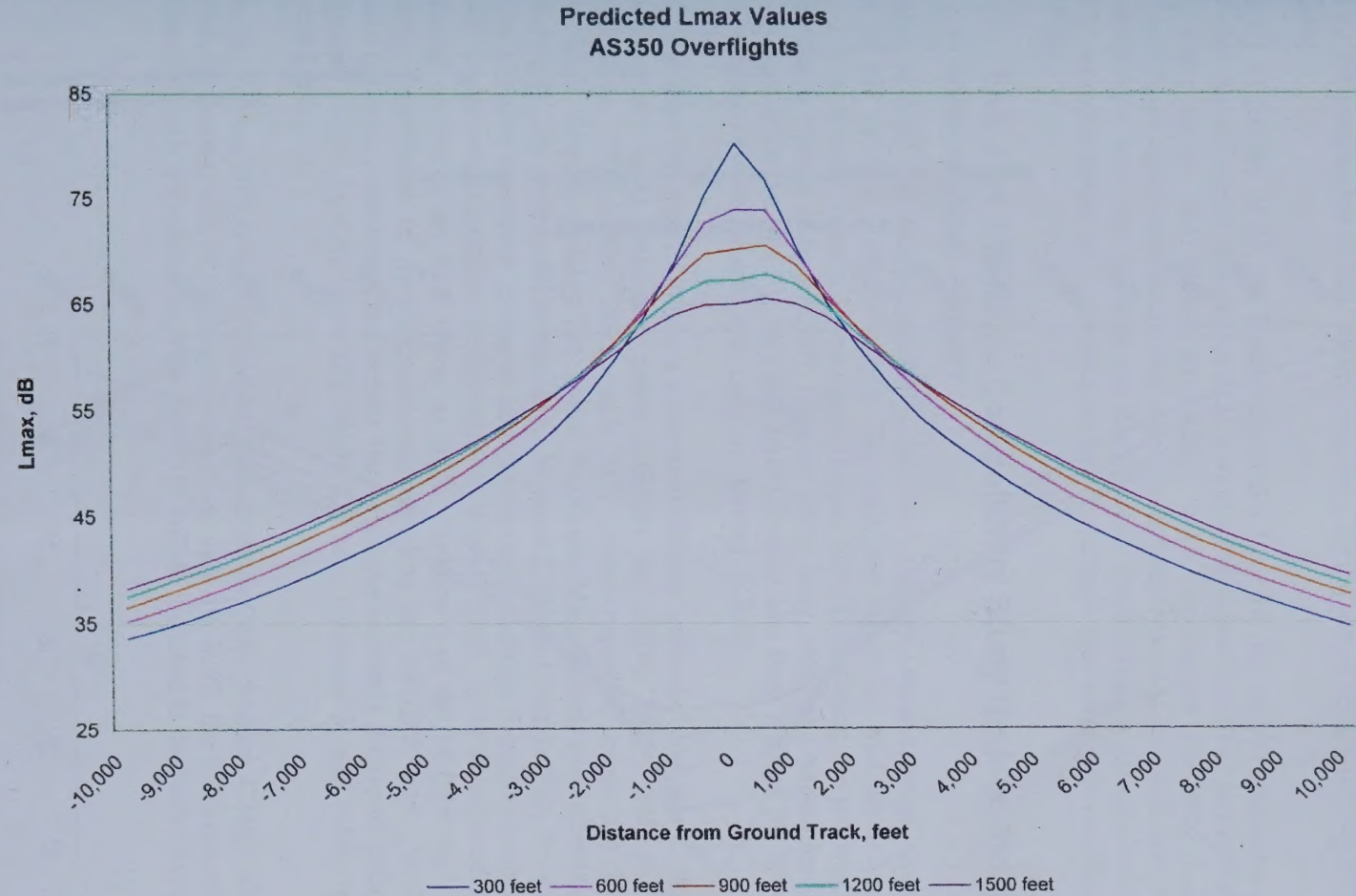
Predicted Single-Event Noise Levels AS350



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates Inc., December 2008

Exhibit D-19

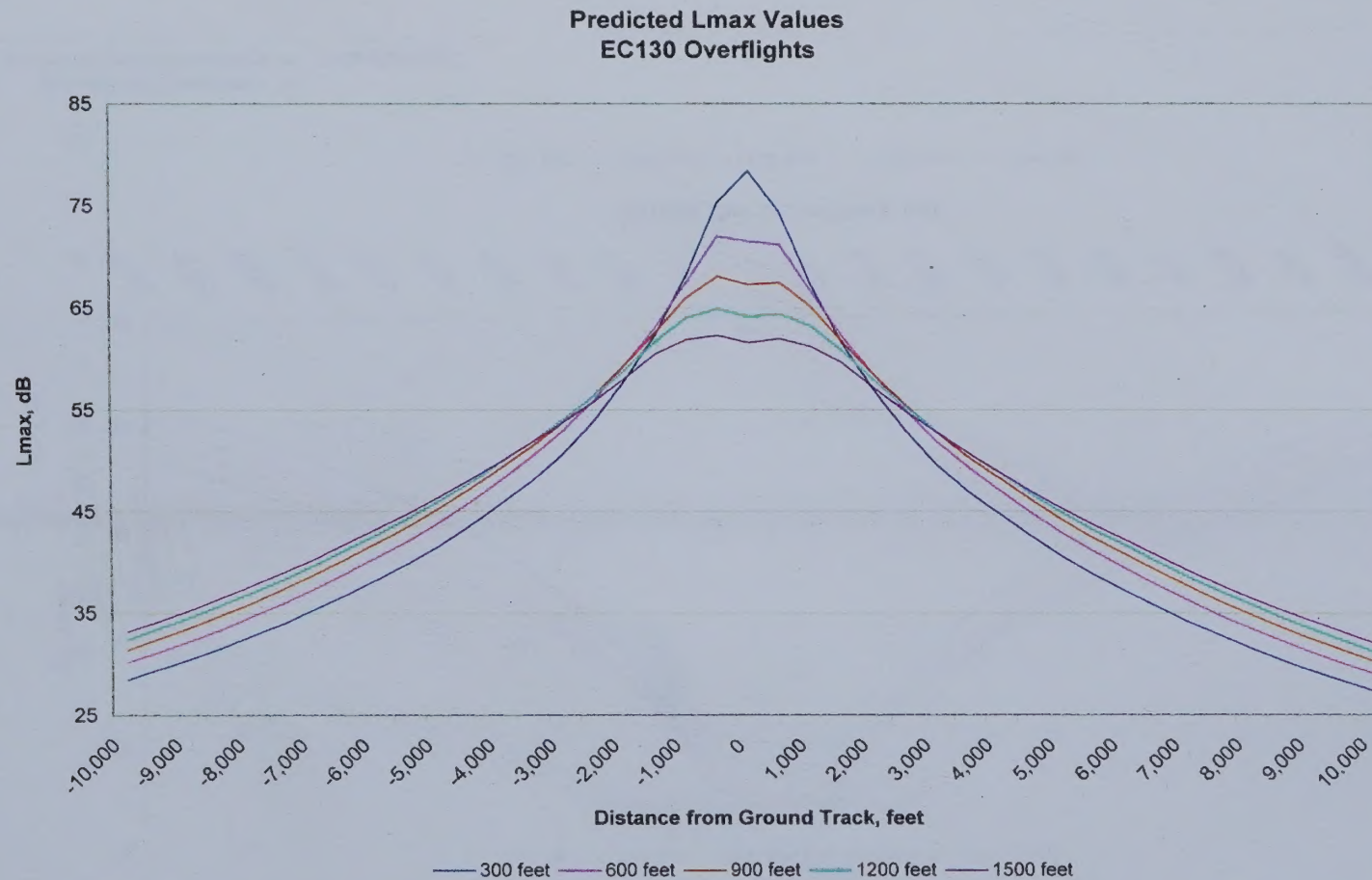
Predicted Single-Event Noise Levels EC130



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates Inc., December 2008

Exhibit D-20

**Predicted Lmax Values
AS 350**



Source: Brown-Buntin Associates, Inc.
Prepared by: Brown-Buntin Associates Inc., December 2008

Exhibit D-21

**Predicted Lmax Values
EC130**

As shown on Exhibit D-18, the highest predicted SEL for the AS350 helicopter (83.3 dBA) would occur when the helicopter is 300 feet AGL and at a location of zero feet horizontally from the center of the flight track. As shown on Exhibit D-19, the highest predicted SEL for the EC130 helicopter (83.1dBA) would also occur when the helicopter is 300 feet AGL and at a location of zero feet horizontally from the center of the flight track. Predicted SEL values shown in Exhibits D-18 and D-19 are comparable to SEL values measured during actual helicopter overflights as described in Table D-6.

As shown on Exhibit D-20, the highest predicted L_{max} for the AS350 helicopter (80.0 dBA) would occur when the helicopter is 300 feet AGL and at a location of zero feet horizontally from the center of the flight track. As shown on Exhibit D-21, the highest predicted L_{max} for the EC130 helicopter (78.0 dBA) would also occur when the helicopter is 300 feet AGL and at a location of zero feet horizontally from the center of the flight track. Predicted L_{max} values shown in Exhibits D-20 and D-21 are comparable to L_{max} values measured during actual helicopter overflights as described in Table D-6.

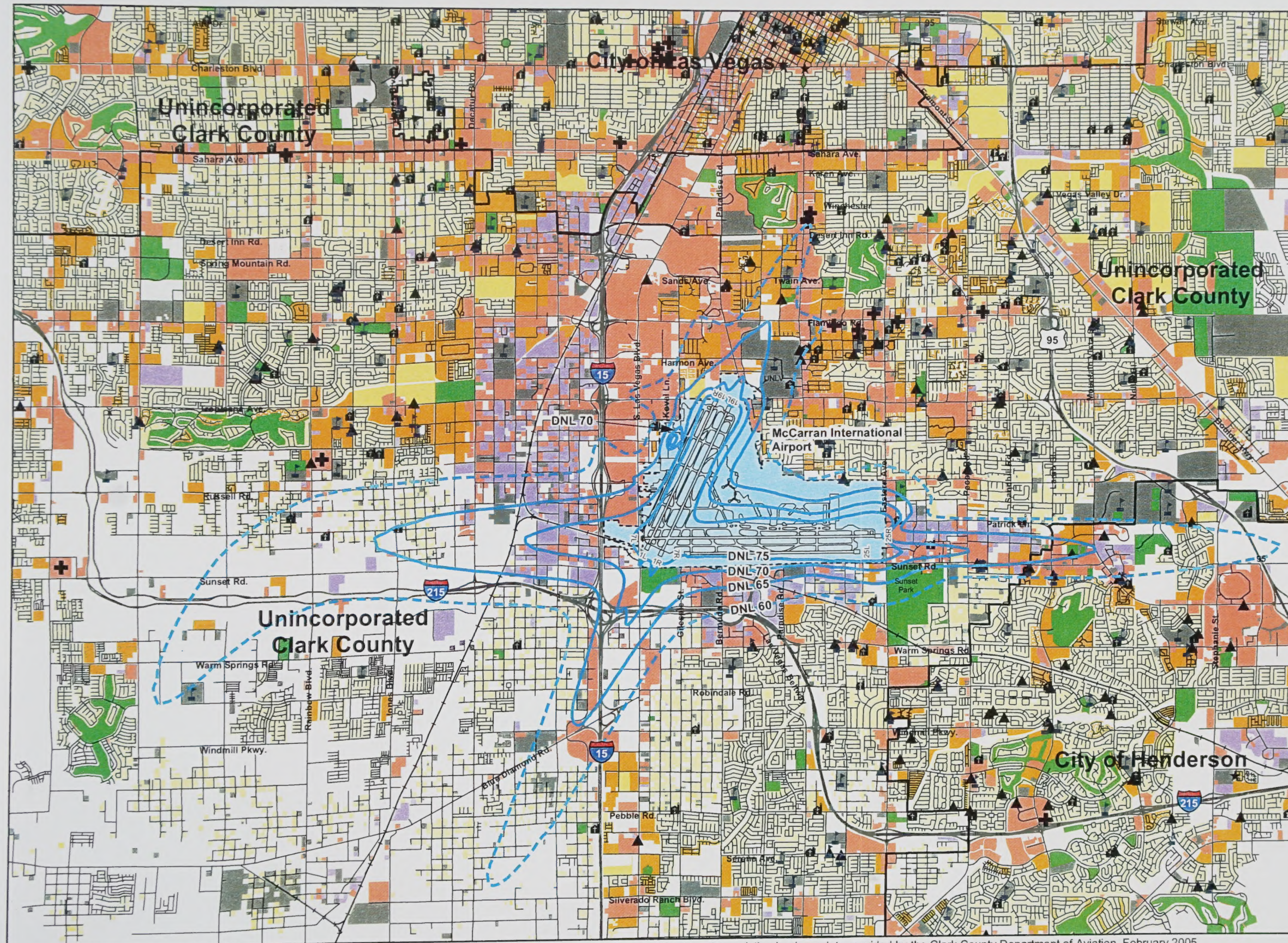
D.8 FAR Part 150 Noise Compatibility Study Update, McCarran International Airport

Beginning in 2005 and throughout 2006, the Clark County Department of Aviation conducted an Update to the 14 CFR Part 150 Noise Compatibility Study for McCarran International Airport, located in Las Vegas, Nevada. Four Open Houses were held during the preparation of the 14 CFR Part 150 Study Update (August 2005, October 2005, May 2006, and September 2006). The public comment period for the 14 CFR Part 150 Study Update was from August 29, 2006 through October 6, 2006; a formal Public Hearing was held on October 3, 2006.

The 14 CFR Part 150 Study Update is comprised of three volumes. Volume 1: Noise Exposure Map Report contains noise exposure maps (NEMs) for 2004, 2011, and 2017 and associated documentation. The 2004, 2011, and 2017 noise exposure maps are included herein as **Exhibits D-22 through D-24**. The Noise Exposure Map Report was submitted to the FAA in December 2006 for review and acceptance. Volume 2: Noise Compatibility Program (NCP) Report, describes 13 noise abatement measures and nine noise mitigation measures proposed for McCarran. The NCP report was submitted to the FAA in March 2007. It is anticipated that the FAA will complete its review of the NCP report in 2008. Volume 3 of the 14 CFR Part 150 Study Update includes a compilation of public comments regarding the 14 CFR Part 150 Study Update and responses to those comments, and details the extensive outreach programs undertaken during the development of the 14 CFR Part 150 Study Update. Volume 3 was submitted to the FAA in December 2006.

Pursuant to Section 107(a) & (b) [Title 49, United States Code, Section 47506] of the Airport Safety and Noise Abatement Act of 1979, as amended, on July 10, 2007, the FAA completed its evaluation of, and has formally accepted, the 2004 and 2011 NEMs included in the Noise Exposure Map Report.

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Legend

- 2004 noise exposure contours (expressed in DNL)
- - - 2004 DNL 60 noise exposure contour (shown for informational purposes only)

DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.

Generalized existing land uses

- | | |
|---|---|
| Residential single-family | Park / recreation* |
| Residential multi-family | Public |
| Mobile home | Vacant / open space |
| Commercial | Airport property |
| Industrial | |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Sources: Brown-Buntin Associates, Inc., October 2005 (noise exposure contours); Ricondo & Associates, Inc., August 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

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↑
north

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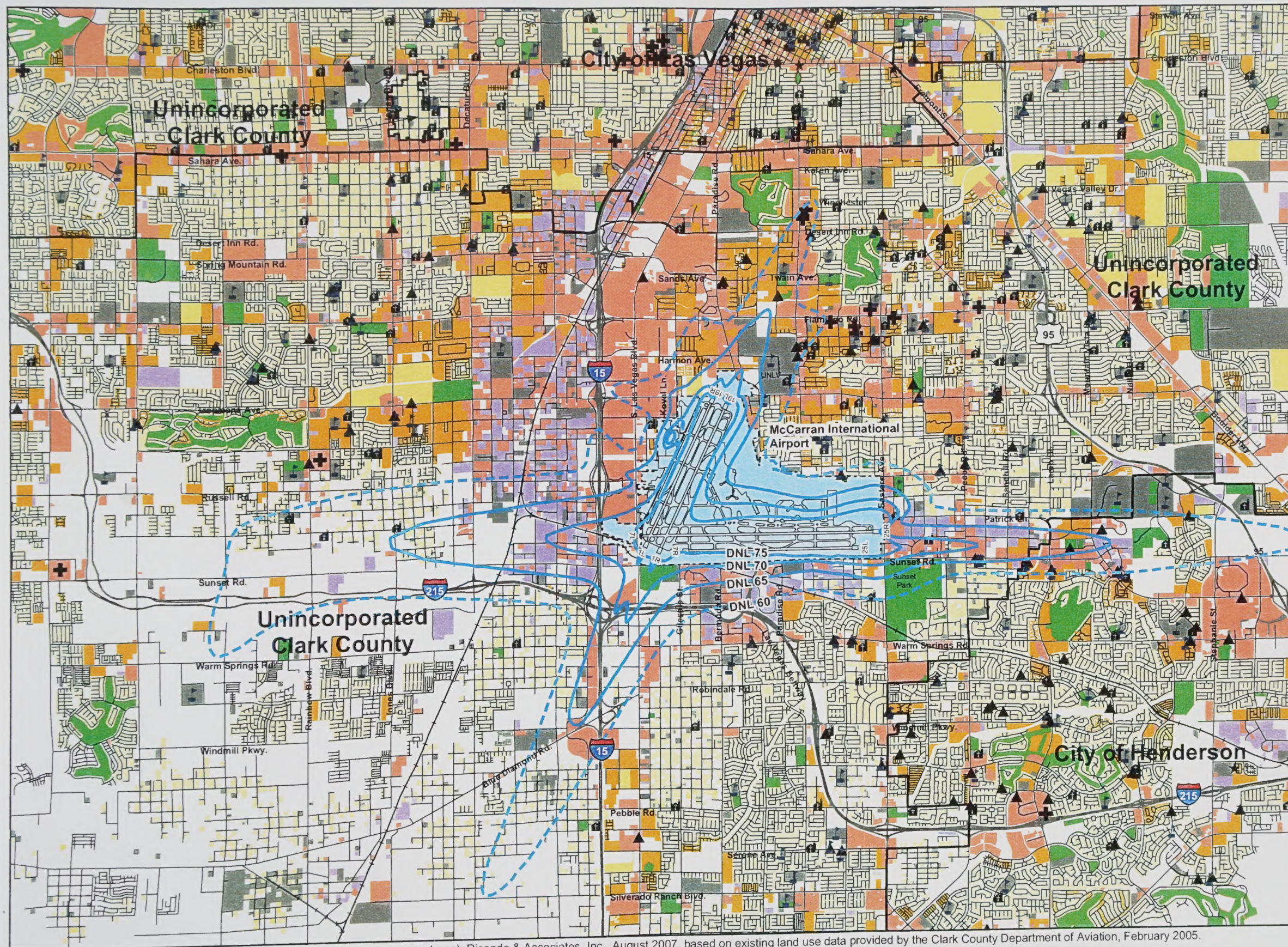
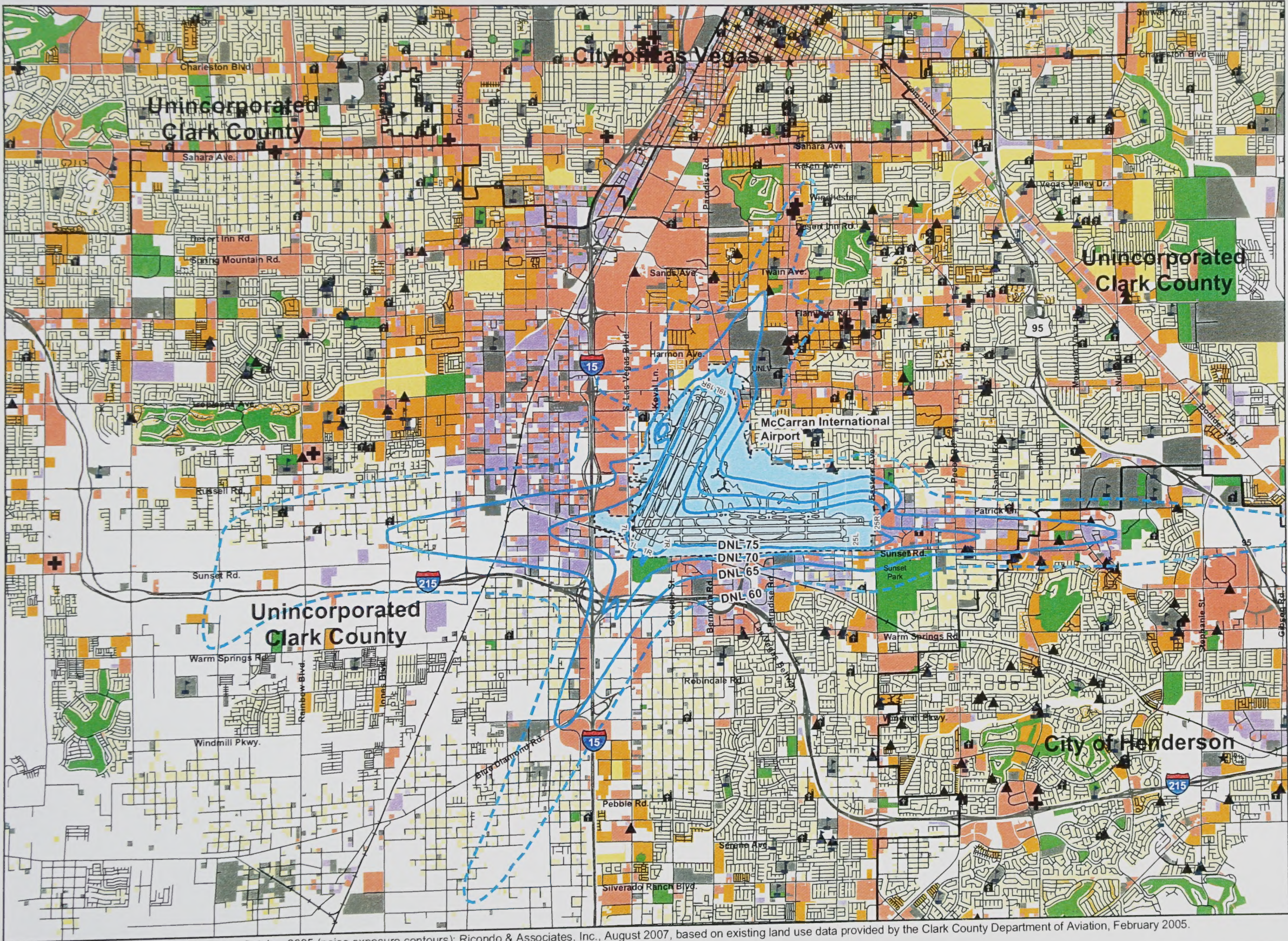


Exhibit D-23

2011 Noise Exposure Map McCarran International Airport

December 2008

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Legend

- 2017 noise exposure contours (expressed in DNL)
- - - 2017 DNL 60 noise exposure contour (shown for informational purposes only)

DNL = Day-Night Average Sound Level - A metric used to describe the existing and predicted cumulative noise exposure for communities surrounding an airport. DNL is expressed in A-weighted decibels (dBA) and represents the average noise level over a 24-hour period. In calculating DNL, the average sound level for each hour during the nighttime period (10:00 p.m. to 6:59 a.m.) is increased by a 10-decibel weighting penalty.

Generalized existing land uses

- | | |
|---|---|
| Residential single-family | Park / recreation* |
| Residential multi-family | Public |
| Mobile home | Vacant / open space |
| Commercial | Airport property |
| Industrial | |

* Recreation includes commercial and non-profit recreational facilities

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- 15 Interstate highway
- U.S. route
- Railroad

Sources: Brown-Buntin Associates, Inc., October 2005 (noise exposure contours); Ricondo & Associates, Inc., August 2007, based on existing land use data provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

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Appendix E. Land Use Plans and Zoning

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Appendix E. Land Use Plans and Zoning

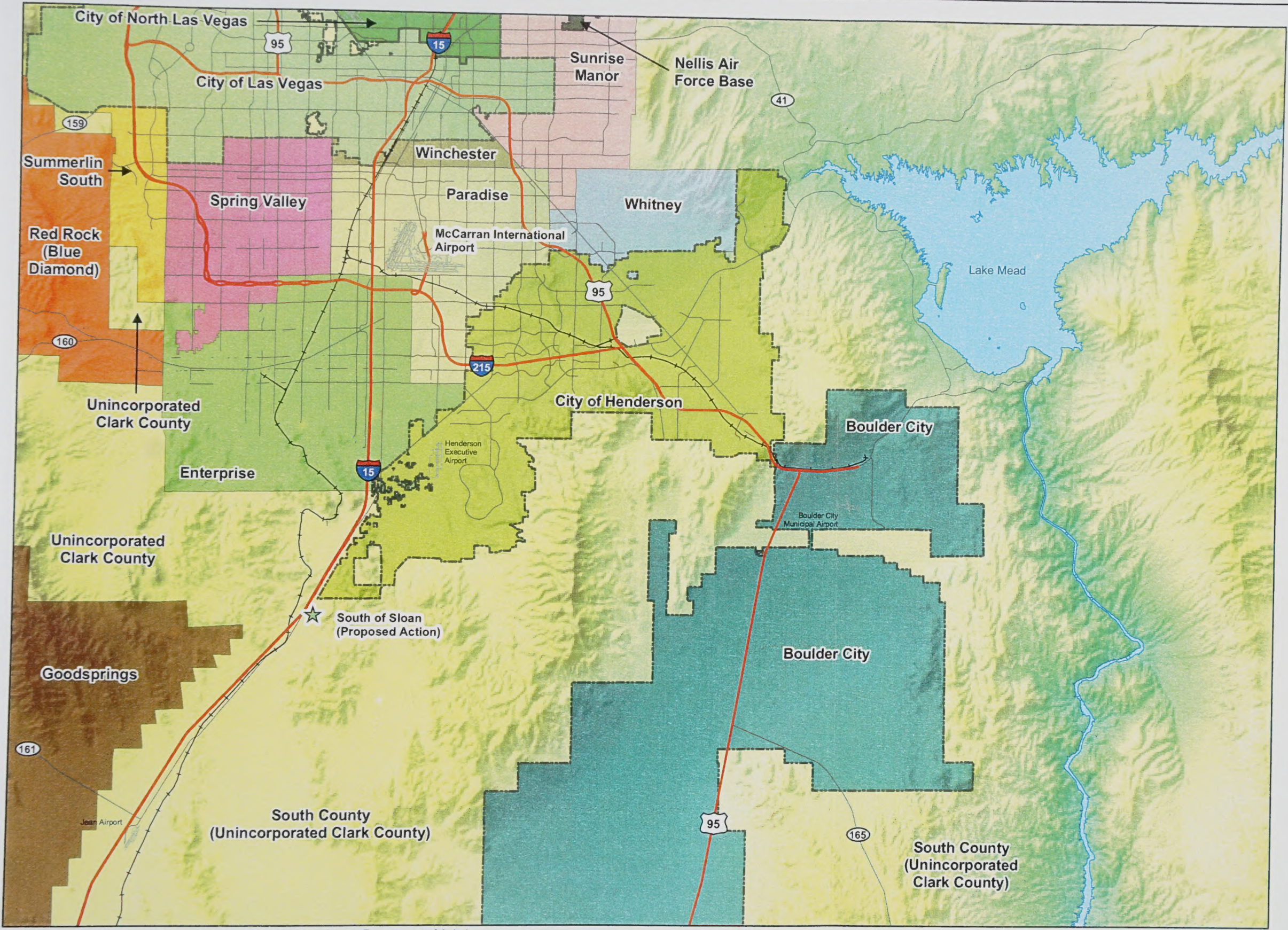
This appendix provides information regarding the land use plans referenced in this EA and information regarding zoning ordinances adopted by Clark County and incorporated jurisdictions in the Las Vegas Valley. Clark County is divided into numerous planning areas encompassing incorporated and unincorporated areas. **Exhibit E-1** shows an overview of the planning areas located near the proposed Heliport site (South of Sloan site) and McCarran International Airport. There are many planning areas in close proximity to the Heliport site. However, not all are described in this Appendix. Planned land use recommendations for unincorporated portions of Clark County are addressed in land use plans developed by the Clark County Department of Comprehensive Planning and approved by the Clark County Board of County Commissioners. Comprehensive/Master Plans have been developed for the incorporated cities of Las Vegas, Henderson, and Boulder City.

The tables presented in this appendix summarize the planned land use categories for each respective land use plan. These tables are intended as a reference guide to be used in conjunction with the generalized planned land use exhibits presented in Chapters III and IV of the EA. Land use plans are summarized in this Appendix for the following:

- Incorporated Cities
 - City of Boulder City
 - City of Henderson
 - City of Las Vegas
- Unincorporated Areas
 - Enterprise
 - South County (including Goodsprings)
 - Sunrise Manor
 - Whitney
 - Winchester and Paradise

The *South County Land Use and Development Guide* was adopted in 1994 and amended in 2005; the *Northwest Clark County Land Use and Development Guide* was adopted in 1996; the *Sunrise Manor Land Use Plan* was adopted in 1999 and updated in 2005; the *Whitney Land Use Plan* was adopted in 2000; the *Enterprise Land Use Plan* was adopted in 2004; and the *Winchester/Paradise Land Use and Development Guide* was adopted in 1996 and updated in 2005. The *City of Boulder City Master Plan* was adopted in 2003; the *City of Las Vegas 2020 Master Plan* was adopted in 2000; and *City of Henderson Comprehensive Plan* was adopted in 1996 and updated in February 2006. The existing Clark County planned land use designations would apply to the West Henderson Planning Area until the City of Henderson's *Comprehensive Plan* is updated.

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Legend

- ★ Proposed heliport site
- Primary road
- Secondary/State road
- Railroad
- Jurisdictional boundary

Source: Ricondo & Associates, Inc., August 2007; Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008.

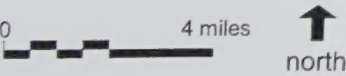


Exhibit E-1

Clark County Planning Areas

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E.1 Incorporated Cities

E.1.1 City of Boulder City

Boulder City is part of the Las Vegas metropolitan area, located about 25 miles southeast of Las Vegas and southwest of the Lake Mead National Recreation Area, in the Eldorado and Hemenway Valleys. Although the Las Vegas metropolitan area has continued to be one of the fastest growing areas in the nation since the early 1990s, much of the recent growth within the Las Vegas Valley has been concentrated in the cities of Las Vegas and Henderson. In 1979, a controlled growth ordinance was passed, limiting the growth rate of the city to less than three percent per year¹. Although the developed portion of Boulder City is approximately 5 square miles, the incorporated city limits now encompass about 200 square miles.

On December 9, 2003, the Boulder City City Council adopted the Boulder City *Master Plan*. The Master Plan, developed by the Boulder City Department of Community Development, is an advisory document that outlines the community's vision and goals for the future and provides guidance for elected and appointed officials in making decisions regarding the long-range needs of the community.

Table E-1 provides definitions and descriptions of the planned land use categories included in the Boulder City *Master Plan*.

Table E-1 (1 of 2)

Planned Land Use Categories – City of Boulder City

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Low Density Residential	n.a.	Areas with a mix of low density housing types in a neighborhood setting. Primary uses include large-lot and low-density detached single-family housing, mobile homes, and manufactured homes.	Residential Single-Family
Medium Density Residential	Up to 17 du/acre	Areas with a mix of low to medium density housing types in a neighborhood setting. Primary uses include single-family, single-family attached, duplex, town homes, apartments, condominiums, and mobile home parks.	Residential Multi-Family
Central Business District	n.a.	Areas with traditional downtown urban fabric in a compact, vibrant setting at a pedestrian-friendly scale. Primary uses include a variety of civic, cultural, retail, commercial, business, hotel, professional offices, and financial institutions.	Commercial
Community Commercial	n.a.	Areas with a mix of retail and commercial services in a concentrated and unified center that serves the local community and may also provide a limited draw for tourists and the surrounding region. Primary uses include restaurants, supermarkets, specialty shops, drycleaners, drugstores, filling stations, retail and health services, and business and professional offices.	Commercial

¹ City of Boulder City website. <http://www.bcnv.org/aboutus.html>. Accessed January 2008.

Table E-1 (2 of 2)

Planned Land Use Categories – City of Boulder City

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Airport Related Commercial	n.a.	Intended to provide a range of services to support the daily needs of airport employees and visitors. Primary uses include restaurants, service stations, car rental, and other accessory uses related to the day-to-day functions of the airport.	Commercial
Mixed-Use Commercial/Office	n.a.	Intended to provide concentrated areas of mixed-use commercial/office developments incorporated into a master planned neighborhood, or located in close proximity to residential areas. Primary uses include high quality employment facilities, such as corporate office headquarters, research and development, and educational facilities in a planned, "campus-like" setting.	Mixed Use
Manufacturing	n.a.	Uses typically involve more intensive work processes, and may involve manufacturing or basic resource handling. Specific uses include light manufacturing, warehousing and distribution, indoor and screened outdoor storage, and a wide range of other manufacturing services and operations.	Industrial
Parks and Recreation	n.a.	Intended to provide for the active and passive recreational needs of the community. Land is generally provided by the city, although recreational facilities, such as privately operated golf courses, are also included. Uses include neighborhood or community parks, trails, and other recreational facilities.	Park/Recreation
Open Lands	n.a.	Areas that have been preserved through public ownership, purchase, donation, land swap, conservation easement, or other means. Provides natural resource protection, view protection, protection of steep slopes or other sensitive areas, and buffering of non-compatible land uses. Active uses include unimproved trails for hiking, biking, equestrian use, and off-road vehicle use.	Open Space
Public/Quasi-Public	n.a.	Areas provided by the city, county, state, or federal agency, or by a quasi-public organization. Uses include schools, government offices, community centers, fire stations, airports, libraries, hospitals, cemeteries, churches, and other places of worship. Also includes facilities needed for essential public services, such as electrical substations, water and wastewater facilities, and other similar uses.	Public

Notes:

du = dwelling units

n.a. = Not applicable

Source: Boulder City Master Plan, 2003

Prepared by: Ricondo & Associates, Inc., April 2008

E.1.2 City of Henderson

The City of Henderson is located about 7 miles south of the Las Vegas Strip and about one mile west of Lake Mead. Named the fastest growing large city in America by the U.S. Department of Commerce, Bureau of the Census in 2000, Henderson is recognized as the gateway community into the Las Vegas region. Henderson is separated by mountains and desert from Boulder City and the Lake Mead National Recreation Area. Its population ranks Henderson as the second largest city in the State of Nevada, overtaking Reno in December 1999. The planning area encompasses about 100 square miles, which includes land annexed by the City of Henderson in early 2007.

The City of Henderson *Comprehensive Plan* was adopted in 1996 and was most recently updated in February 2006. **Table E-2** provides definitions and descriptions of the planned land use categories included in the City of Henderson *Comprehensive Plan*.

Table E-2

Planned Land Use Categories – City of Henderson

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Very Low Density Residential	1-2 du/acre	Single-family detached homes	Residential Single-Family
Low Density Residential	1-6 du/acre	Single-family detached homes, single-family attached homes, mobile home estates	Residential Single-Family
Medium Density Residential	5-16 du/acre	Single-family attached homes, mobile homes, condominiums, townhomes, apartments, and other multi-family residences	Residential Multi-Family
High Density Residential	20-36 du/acre	Apartments, condominiums, townhomes, duplexes, and other multi-family residences	Residential Multi-Family
Downtown Low-Density Residential	n.a.	Single-family detached residences	Residential Single-Family
Downtown Medium Density Residential	n.a.	Single-family attached homes, condominiums, townhomes, and other multi-family residences	Residential Multi-Family
Downtown High Density Residential	n.a.	Single-family attached homes, apartments, condominiums, townhomes, and other multi-family residences	Residential Multi-Family
Rural Neighborhood Preservation 1	1-5 acres per du	Single-family detached homes	Residential Single-Family
Rural Neighborhood Preservation 2	0.5-5 acres per du	Single-family detached homes	Residential Single-Family
Commercial	n.a.	Retail and service establishments, offices, theaters, and repair services	Commercial
Tourist Commercial	n.a.	Hospitality and commercial tourist services, hotel and resort developments, mixed use residential developments	Mixed Use
Transit Oriented Development	Maximum of 36 du per acre	Multi-family residential, mixed use residential, and commercial developments	Mixed Use
Neighborhood Commercial	n.a.	Low-rise offices, neighborhood retail, and neighborhood services.	Commercial
Downtown Highway Commercial	n.a.	Commercial, retail, government, offices, and visitor accommodations	Commercial
Downtown Core Commercial	n.a.	Pedestrian friendly commercial, retail, office, arts, and entertainment	Commercial

Table E-2 (2 of 2)**Planned Land Use Categories – City of Henderson**

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Business Industrial	n.a.	Business parks, light and heavy industrial manufacturing, warehouses	Industrial
Light Business Industrial		Light industrial, light warehousing, manufacturing, and business parks	Industrial
Public/Semi-Public	n.a.	Parks, libraries, community facilities, open spaces, fire stations, utilities, and other public uses.	Public
Downtown Public	n.a.	Cultural institutions, government offices, hospitals, parks, community services, schools, and conventions	Public
Planned Community	n.a.	Modern and innovative projects following the best planning practices available	Mixed Use

Notes:

du = dwelling units

n.a. = Not applicable

Source: City of Henderson Comprehensive Plan, February 2006

Prepared by: Ricondo & Associates, Inc., April 2008

E.1.3 City of Las Vegas

Las Vegas is the largest city in Nevada. According to the Las Vegas Chamber of Commerce, more than 5,000 people move to Las Vegas each month, making it one of the country's fastest growing cities. The population of Las Vegas is distributed across the city at varying densities. Generally, the most densely populated areas are in the central downtown, the Penwood/Arville area, and along the U.S. 95/Interstate 515 corridor to the west and northwest. It is important to note that twice as many people live west of Decatur Boulevard as live east of Decatur Boulevard, and over 96 percent of the population growth over the next 20 years, assuming continuation of the current trend, is projected to occur in the western and northwestern portions of the city. According to the Las Vegas 2020 Master Plan, over 300,000 residents are expected to be added to the city over the next 20 years, for a 2020 projection of 760,000 to 800,000 people.

The Las Vegas 2020 Master Plan was adopted in 2000. This Master Plan is intended to provide a broad and comprehensive level of policy direction for future land use decisions and related aspects of corporate planning in the City of Las Vegas through 2020. The Master Plan is also intended to ensure that the City of Las Vegas is in compliance with the requirements of all applicable State laws. Although this document is intended to provide guidance to City staff, the Planning Commission, and the City Council in making planning-related decisions, it is also intended to be a readable, handy reference for the development community and the general public.

Table E-3 provides definitions and descriptions of the planned land use categories included in the City of Las Vegas 2020 Master Plan.

Table E-3 (1 of 2)

Planned Land Use Categories – City of Las Vegas

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Desert Rural Density Residential	Up to 2 du/acre	Predominantly single-family homes on large lots, many including equestrian facilities.	Residential Single-Family
Rural Density Residential	From 2.1 du/acre to 3.5 du/acre	Similar to Desert Rural Density Residential, but with a smaller allowable lot size.	Residential Single-Family
Low Density Residential	From 3.6 du/acre to 5.5 du/acre	Single-family detached homes, manufactured homes on individual lots, gardening, residential planned developments, and planned community developments.	Residential Single-Family
Medium Low Density Residential	From 5.6 du/acre to 8 du/acre	Single-family compact lots and zero lot lines, manufactured homes, and residential planned developments.	Residential Single-Family
Medium Low Attached Density Residential	From 8.1 du/acre to 12 du/acre	Variety of multi-family units, such as townhouses, condominiums, and low-density apartments.	Residential Multi-Family
Medium Residential	From 12.5 du/acre to 25 du/acre	Higher density variety of multifamily unit types; typically allows buildings up to three stories in height.	Residential Multi-Family

Table E-3 (2 of 2)

Planned Land Use Categories – City of Las Vegas

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
High Density Residential	Greater than 25 du/acre	The highest-density residential category permitted within Las Vegas.	Residential Multi-Family
Planned Community Development	Up to 8 du/acre	Mix of residential uses (single family detached, single family attached, condominiums, apartments, townhouses). Accommodates orderly growth in developing parts of the city, but can also be used to encourage infill development within older neighborhoods.	Major Development Project/Planned Unit Development
Town Center	n.a.	This mixed-use category established the limits of the principal commercial and employment district for the Centennial Hills section of the city.	Mixed Use
Office	n.a.	Small lot office conversions as a transition, along major streets, from residential to commercial uses, and large planned office areas.	Commercial
Service Commercial	n.a.	Low to medium intensity retail, office, or other commercial uses that serve primarily local area patrons.	Commercial
General Commercial	n.a.	More intense retail, service, wholesale, office, and other general business uses, and may include limited outdoor storage or display of products, noise, lighting, or other characteristics not generally considered compatible with adjoining residential areas with significant transition.	Commercial
Light Industrial/Research	n.a.	Areas appropriate for clean, low intensity industrial uses.	Industrial
Parks/Recreation/Open Spaces	n.a.	Large public parks and recreation areas, such as public and private golf courses, trails and easements, drainage-ways, and detention basins.	Park/Recreation
Resource Conservation	n.a.	Lands currently not envisioned for development.	Open Space
Public Facilities	n.a.	Large governmental building sites, complexes, police and fire facilities, non-commercial hospitals and rehabilitation sites, sewage treatment and storm water control facilities, schools, and other uses considered public or quasi-public.	Public

Notes:

du = dwelling units

n.a. = Not applicable

Source: City of Las Vegas, 2020 Master Plan, 2000

Prepared by: Ricondo & Associates, Inc., April 2008

E.2 Unincorporated Areas

E.2.1 Enterprise

The Enterprise planning area is in unincorporated Clark County and encompasses over 66 square miles in the southwestern part of the Las Vegas Valley. Enterprise is generally bounded by Sunset Road to the north, Larson Lane to the south, Bermuda Road to the east, and Hualapai Way to the west. The planning area is traversed north to south by Interstate-15 and east to west by Interstate 215 and Blue Diamond Road (State Highway 160). These highways serve as major transportation corridors for those in or passing through the area. The interstate corridors are supplemented by the typical grid street pattern predominant in the Las Vegas Valley. Enterprise has experienced many changes in the past several years, with considerable new residential development. The demand for commercial development still exists in the area.

The *Enterprise Land Use Plan* provides a guide for decision-making by the Enterprise Town Advisory Board, the County Planning Commission, and Clark County Board of County Commissioners concerning growth and development. While the land use plan is to be used by policy makers to guide their decisions, it also serves as a reference for the general public. The plan contains a series of goals and policies used to define development standards, guide public investment, and guide public and private decision-making. The Board of County Commissioners adopted the most recent update of the *Enterprise Land Use Plan* in December 2004. **Table E-4** provides definitions and descriptions of the planned land use categories included in the *Enterprise Land Use Plan*.

Table E-4 (1 of 2)

Planned Land Use Categories – Enterprise Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Residential Rural	Up to 0.5 du/acre	Primary land uses are large lot, single-family residential. Single-family detached dwellings generally occupy lots of at least one acre and have limited access to public services and facilities.	Residential Single-Family
Residential Agriculture	Up to 1 du/acre	Primary land uses are large lot, single-family residential. Single-family detached dwellings generally occupy lots of at least one acre and have limited access to public services and facilities. Also includes areas where the primary land use is commercial farming, including, but not limited to, crop production and raising livestock (not open range grazing).	Residential Single-Family
Rural Neighborhood	Up to 2 du/acre	The predominant housing type is detached single-family residential development at low densities.	Residential Single-Family
Rural Neighborhood Preservation	Up to 2 du/acre	Predominantly single-family homes on large lots, many including equestrian facilities. Intended to protect areas within the Las Vegas Valley that are already developed and rural in character.	Residential Single-Family
Residential Low	Up to 3.5 du/acre	Predominantly single-family detached residential development. Public infrastructure and services availability affect density within this category.	Residential Single-Family
Residential Suburban	Up to 8 du/acre	Predominantly single-family detached residential development. Local supporting public facility uses are also allowed with appropriate buffering and setbacks.	Residential Single-Family
Multi-Family	From 8 du/acre to 18 du/acre	Allows a variety of housing types, including single-family, residential multiplexes, town houses, and apartments.	Residential Multi-Family

Table E-4 (2 of 2)

Planned Land Use Categories – Enterprise Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Suburban Center	From 18 du/acre to 32 du/acre	Allows a variety of housing types, including single-family, residential multiplexes, town houses, and apartments. Mixed uses are permitted within appropriate zoning districts.	Residential Multi-Family
Urban Center	Greater than 32 du/acre	High density/intensity residential, supporting commercial and office professional uses.	Residential Multi-Family
Office Professional	n.a.	Low intensity business and professional services and accessory service uses. Typical uses include offices providing medical, legal, financial, and day care services.	Commercial
Commercial Neighborhood	n.a.	Low to medium intensity retail and service commercial uses that serve primarily local area patrons, but does not include more intense general commercial characteristics.	Commercial
Commercial General	n.a.	Allows medium to high intensity retail and service commercial uses that serve primarily regional area patrons.	Commercial
Commercial Tourist	n.a.	Commercial establishments that primarily cater to tourists, including casinos, resorts, hotels, motels, recreational vehicle parks, time shared condominiums, amusement or theme parks.	Mixed Use
Major Development Projects	n.a.	Areas where land uses of greater densities than 2 du per acre are considered premature and/or inappropriate unless guided by the County's Major Projects Review Process.	Major Development Project/Planned Unit Development
Business and Design/Research Park	n.a.	Areas where commercial professional or manufacturing developments are designed to assure minimal impact on surrounding areas. Major uses include research and development, incubator businesses, food sales and distribution, postal and data processing centers, vehicle sales and repair, and general non-hazardous material warehousing.	Industrial
Industrial	n.a.	Areas of industrial use and areas for new and existing industrial development in proximity to major transportation facilities.	Industrial
Heavy Industrial	n.a.	Areas of industrial use and areas for intense industrial operation and development in proximity to major transportation facilities. These facilities are generally located outside the Las Vegas Valley for safety reasons.	Industrial
Open Land	Up to 1 du/10 acres	Areas with highly limited availability of public services and facilities. Lands are primarily in public ownership. Grazing, open space, and recreational uses may occur. For lands in private ownership, only single-family/farm uses at densities no greater than one du per 10 acres.	Open Space
Public Facilities	n.a.	Primary land uses are public and quasi-public services and facilities. Examples include: schools, libraries, museums, churches, police/fire stations, and cemeteries.	Public

Notes:

du = dwelling units

n.a. = Not applicable

Source: Clark County Board of County Commissioners. Enterprise Land Use Plan, December 2004

Prepared by: Ricondo & Associates, Inc., April 2008

E.2.2 South County

The South County planning area encompasses about 1,980 square miles in the southern part of Clark County, generally bounded by the Las Vegas Valley to the north, the Colorado River to the east, Laughlin to the south, and the State of California to the west. US-95 and I-15 serve as the major transportation corridors for the planning area. Communities located within the planning area include Cal-Nev-Ari, Goodsprings, Jean, Nelson, Sandy Valley, Searchlight, Sloan, and Stateline. The three communities included in the South County planning area that are in proximity to the alternative heliport sites assessed in this EA include Goodsprings, Jean, and Sloan.

Goodsprings is a small residential community approximately 30 miles southwest of Las Vegas. The community was first settled by Joseph Good in 1861 and, in 1895, it was organized as the town of Goodsprings. At its peak, Goodsprings had a population of about 800 residents, along with a school, hotel, saloons, a hospital, weekly newspaper, and a “red-light district.” In recent years, the population of Goodsprings has decreased to less than 200 residents. There is very little commercial activity in Goodsprings and most of the town consists of single-family residences on small lots.

Formed on June 28, 1905, the town of Jean was originally called Goodsprings Junction. Jean is about 30 miles south of Las Vegas. The community is named for Jean Fayle, the wife of one of the original settlers. In the early 1900s, the Union Pacific Railroad used Jean as a vital link between Salt Lake City, Utah and the mining districts of southern Nevada. Currently, Jean has two large hotel/casinos, but no permanent residents. The community also houses the Southern Nevada Correctional Center.

Sloan is about 18 miles south of Las Vegas. It was settled in about 1912, and was originally called Ehret. On September 11, 1922, the name was changed from Ehret to Sloan. Sloan is a sparsely settled bedroom community with a large open pit limestone mine.

The *South County Land Use and Development Guide* was most recently adopted by the Clark County Board of County Commissioners in 1995, and is scheduled to be updated again in 2005-2006. **Table E-5** provides definitions and descriptions of the planned land use categories included in the *South County Land Use and Development Guide*.

Table E-5 (1 of 2)

Planned Land Use Categories – South County Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Residential Countryside	Up to 1 du/2 acres	Primary land uses are large lot, single family residential. Single family detached dwellings generally occupy lots of at least 2 acres and have limited access to public services and facilities.	Residential Single-Family
Residential Rural	Up to 1 du/acre	Primary land uses are large lot, single family residential. Single family detached dwellings generally occupy lots of at least 1 acre and have limited access to public services and facilities.	Residential Single-Family
Residential Suburban	Up to 2 du/acre	Predominant housing type is detached single family developed at low densities.	Residential Single-Family
Residential Low	Up to 8 du/acre	Predominant housing type is detached single family developed at low to medium densities. Townhomes and mobile home developments may be appropriate.	Residential Single-Family
Residential Medium	Up to 18 du/acre	Predominant housing type is multiple family developed at medium densities. All apartments, condominiums, townhouses, mobile home park developments, and "plexes" are included in this designation.	Residential Multi-Family
Commercial Low	Up to 8 du/acre	Primary land use is mixed commercial. Uses include day care services and offices where medical, legal, financial, and other business/professional services are performed. May be used as a buffer between more intense commercial and residential land uses.	Commercial
Commercial General	Up to 8 du/acre	Primary land use is mixed commercial. Typical uses include general retail sales, banks, eating and drinking places, indoor amusements and recreation, motels, car dealerships, and office buildings.	Commercial
Commercial/Industrial	n.a.	Primary land uses are commercial, professional, or industrial developments designed to assure minimal impact on surrounding areas. Includes research and development, food sales, postal and data processing centers, vehicle repair, and general non-hazardous warehousing.	Commercial
Commercial Tourist	n.a.	Commercial establishments that primarily cater to tourists. Land uses include casinos, resorts, hotels, motels, recreational vehicle parks, and amusement or theme parks.	Mixed Use

Table E-5 (2 of 2)

Planned Land Use Categories – South County Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Industrial	n.a.	Primary land uses are medium to heavy intensity industries. Typical uses include assembly plants, heavy equipment repair, sales, salvage, or storage, outside storage facilities, and transmission facilities.	Industrial
Parks and Recreation	n.a.	Primary land uses are low intensity public, quasi-public or private outdoor recreation facilities. Includes parks, golf courses, tennis courts, and ball fields.	Recreation
Open Land	Up to 1 du/10 acres	Areas with highly limited availability of public services and facilities. Lands are primarily in public ownership. Grazing, open space, and recreational uses may occur. For lands in private ownership, only single-family/farm uses at densities no greater than one du per 10 acres or at densities in accordance with existing zoning for those private parcels.	Open Space
Public Facility	n.a.	Primary land uses are public and quasi-public services and facilities. Includes schools, libraries, museums, hospitals, churches, police/fire stations, and cemeteries.	Public

Notes:

du = dwelling units

n.a. = Not applicable

Source: Clark County Board of County Commissioners. South County Land Use and Development Guide, December 1995

Prepared by: Ricondo & Associates, Inc., April 2008

E.2.3 Sunrise Manor

The Sunrise Manor planning area encompasses approximately 40 square miles in unincorporated Clark County in the eastern portion of the Las Vegas Valley. The Sunrise Manor planning area is generally bounded by Interstate 15 to the north, Boulder Highway and Harmon Road to the south, the Frenchman and Sunrise Mountains to the east, and Pecos Road, Nellis Boulevard, and Boulder Highway to the west.

In the early 1930s, Boulder Highway was constructed from downtown Las Vegas to Railroad Pass during the construction of the Hoover Dam, and in the 1940s, the Las Vegas Army Airfield (now Nellis Air Force Base) was established as a training facility. These two facilities contributed to the development of commercial activity along Las Vegas Boulevard North, Boulder Highway, and Nellis Boulevard. In May 1957, the Clark County Board of County Commissioners created the unincorporated Town of Sunrise Manor and established the town boundary. The boundary was modified in 1996 when land to the east was added.

The *Sunrise Manor Land Use and Development Guide* was originally adopted in 1991. In 1999, an update, the Sunrise Manor Land Use Plan, was adopted. Since that time, some changes in development have occurred. This land use plan is currently being updated to ensure that the policies and land use map are current and relevant. **Table E-6** provides definitions and descriptions of the planned land use categories included in the Sunrise Manor Land Use Plan.

Table E-6 (1 of 2)

Planned Land Use Categories – Sunrise Manor Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Rural Neighborhood Preservation	Up to 2 du/acre	Predominantly single-family homes on large lots, many including equestrian facilities. Intended to protect areas within the Las Vegas Valley that are already developed and rural in character.	Residential Single-Family
Rural Estates	Up to 2 du/acre	Predominant housing type is detached single family developed at low densities. Local-supporting public facility uses are also allowed with appropriate buffering and setbacks.	Residential Single-Family
Suburban Residential	Up to 8 du/acre	Single-family detached homes, manufactured homes on individual lots within appropriate zoning districts, and residential planned developments are permitted. Building heights generally do not exceed 35 feet.	Residential Single-Family
Multiple Family Residential	Up to 18 du/acre	Areas where a variety of housing types, including single family, plexes, townhouses, manufactured home parks and low density apartments, are allowed. Building heights generally do not exceed 35 feet.	Residential Multi-Family
Residential High	Up to 32 du/acre	Areas where a variety of housing types, including single family, plexes, townhouses, and apartments, are allowed. Building heights generally do not exceed 35 feet.	Residential Multi-Family
Office Professional	n.a.	Primary uses are low intensity business and professional services and accessory service uses. Typical uses include offices where medical, legal, financial, and day care services are performed.	Commercial
Neighborhood Commercial	n.a.	Low to medium intensity retail and service commercial uses that serve primarily local area patrons, but more intense general commercial characteristics are not included.	Commercial
Commercial General	n.a.	Allows medium to high intensity retail and service commercial uses that serve primarily regional area patrons.	Commercial
Regional Commercial	n.a.	Areas for commercial establishments that draw businesses, residents, visitors, and tourists from a wider area than do Commercial General uses. The predominant land uses include regional malls, "club or membership" stores, high-density apartments, casinos, resorts, hotels, motels, recreational vehicle parks, stadiums, and amusement or theme parks.	Mixed Use
Business Park/Industrial	n.a.	Primary land uses are commercial, professional, or industrial developments. Major uses include office, research and development, food sales and distribution, postal and data processing centers, vehicle repair, and general non-hazardous warehousing.	Industrial

Table E-6 (2 of 2)

Planned Land Use Categories – Sunrise Manor Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Industrial	n.a.	Allows light and medium intensity industries and provides areas for new and existing industrial development in proximity to major transportation facilities.	Industrial
Heavy Industrial	n.a.	Allows high intensity industries. These uses are not compatible with urban or suburban development. New uses in this category are typically located outside the Las Vegas Valley.	Industrial
Open Land	Up to 1 du/10 acres	Areas with highly limited availability of public services and facilities. Lands are primarily in public ownership. Grazing, open space, and recreational uses may occur. For lands in private ownership, only single-family/farm uses at densities no greater than one du per 10 acres or at densities in accordance with existing zoning for those private parcels.	Open Space
Public Facility/Parks and Recreation	n.a.	Allows large public parks and outdoor recreation facilities, such as public and private golf courses, trails and easements, drainage ways, and detention basins.	Park/Recreation
Public Land Management Area	n.a.	Areas of publicly held land. The Bureau of Land Management Resource Plan provides comprehensive land use planning for public lands within the Las Vegas District. Clark County wishes to preserve these public lands for open space for regional environmental, economic, social, educational and recreational benefit. In this area, some privately held lands may be eligible for residential development at densities in accordance with the existing zoning for those private parcels.	Public

Notes:

du = dwelling units

n.a. = Not applicable

Source: Clark County Board of County Commissioners. Sunrise Manor Land Use Plan, April 1999, as amended.

Prepared by: Ricondo & Associates, Inc., April 2008

E.2.4 Whitney

The Whitney planning area encompasses approximately 37 square miles in the southeastern portion of the Las Vegas Valley, and includes the unincorporated Town of Whitney. The planning area is generally bounded by Desert Inn Road to the north, Russell Road to the south, the eastern border of the Desert Wetlands Park and the City of Henderson to the east, and Nellis Boulevard to the west.

In 1942, the Clark County Board of County Commissioners established the unincorporated Town of Whitney and set its boundaries. The vast majority of the land in Whitney is controlled by the Bureau of Land Management and is unavailable for development because of the steep slopes. Development can also be influenced or impeded by threatened and endangered wildlife and plant species. The Desert Wetlands Park, along the Las Vegas Wash in the southern portion of Whitney, is being developed as a preserve and community resource.

The Clark County Board of County Commissioners adopted the most recent update to the Whitney Land Use Plan on February 2, 2000. The next update of the plan is scheduled for 2006-2007. **Table E-7** provides definitions and descriptions of the planned land use categories included in the *Whitney Land Use Plan*.

Table E-7 (1 of 2)

Planned Land Use Categories – Whitney Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Rural Estates	Up to 2 du/acre	Predominant housing type is detached single family developed at low densities. Local-supporting public facility uses are also allowed with appropriate buffering and setbacks.	Residential Single-Family
Suburban Residential	Up to 8 du/acre	Single-family detached homes, manufactured homes on individual lots within appropriate zoning districts, and residential planned developments are permitted. Building heights generally do not exceed 35 feet.	Residential Single-Family
Multiple Family Residential	Up to 18 du/acre	Areas where a variety of housing types, including single family, plexes, townhouses, manufactured home parks and low density apartments, are allowed. Building heights generally do not exceed 35 feet.	Residential Multi-Family
Residential High	Up to 32 du/acre	Areas where a variety of housing types, including single family, plexes, townhouses, and apartments, are allowed. Building heights generally do not exceed 35 feet.	Residential Multi-Family
Office Professional	n.a.	Primary uses are low intensity business and professional services and accessory service uses. Typical uses include offices where medical, legal, financial, and day care services are performed.	Commercial
Commercial General	n.a.	Allows medium to high intensity retail and service commercial uses that serve primarily regional area patrons.	Commercial

Table E-7 (2 of 2)

Planned Land Use Categories – Whitney Planning Area

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Business Park/Industrial	n.a.	Primary land uses are commercial, professional, or industrial developments. Major uses include office, research and development, food sales and distribution, postal and data processing centers, vehicle repair, and general non-hazardous warehousing.	Industrial
Major Development Projects	n.a.	Areas where land uses of greater densities than 2 du per acre are considered premature and/or inappropriate unless guided by the County's Major Projects Review Process.	Major Development Project/Planned Unit Development
Open Land	Up to 1 du/10 acres	Areas with highly limited availability of public services and facilities. Lands are primarily in public ownership. Grazing, open space, and recreational uses may occur. For lands in private ownership, only single-family/farm uses at densities no greater than one du per 10 acres or at densities in accordance with existing zoning for those private parcels.	Open Space
Public Facility/Parks and Recreation	n.a.	Allows large public parks and outdoor recreation facilities, such as public and private golf courses, trails and easements, drainage ways, and detention basins.	Park/Recreation
Public Land Management Area	n.a.	Areas of publicly held land. The Bureau of Land Management Resource Plan provides comprehensive land use planning for public lands within the Las Vegas District. Clark County wishes to preserve these public lands for open space for regional environmental, economic, social, educational and recreational benefit. In this area, some privately held lands may be eligible for residential development at densities in accordance with the existing zoning for those private parcels.	Public

Notes:

du = dwelling units

n.a. = Not applicable

Source: Clark County Board of County Commissioners. Whitney Land Use Plan, February 2, 2000, as amended.

Prepared by: Ricondo & Associates, Inc., April 2008

E.2.5 Winchester and Paradise

The Winchester and Paradise planning area encompasses approximately 48 square miles of unincorporated Clark County in the southern portion of the Las Vegas Valley. The Winchester and Paradise planning area is generally bounded by Sahara Avenue to the north, Sunset Road and Silverado Ranch Road to the south, and Nellis Boulevard and Eastern Avenue to the east. This planning area contains some of the most urbanized and completely developed areas in the Las Vegas Valley, with only limited amounts of open space. The majority of the population is concentrated east of Las Vegas Boulevard. Land uses consist of a combination of single- and multi-family residences, commercial and industrial development, as well as a concentration of hotels and casinos along Las Vegas Boulevard.

The unincorporated Town of Paradise was created in December 1950. In 1951, the Town of Paradise (A) was created, followed by the Town of Paradise (B) in January 1952. In October 1953, Paradise (A) was renamed Winchester, and Paradise (B) became Paradise. In August 1973, a Citizens Advisory Council was created. The town boundaries were adjusted in January 1973, January 1976, and March 1976. In November 1979, the Winchester Town Advisory Board was created, followed by creation of the Paradise Town Advisory Board in December 1979.

The Clark County Board of County Commissioners adopted the most recent update of the Winchester and Paradise Land Use and Development Guide on August 3, 2005. **Table E-8** provides definitions and descriptions of the planned land use categories included in the *Winchester and Paradise Land Use and Development Guide*.

Table E-8 (1 of 2)

Planned Land Use Categories – Winchester and Paradise Planning Areas

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Residential Countryside	Up to 1 du/acre	Primary land uses are large lot, single-family residential. Single-family detached dwellings generally occupy lots of at least 2 acres and have limited access to public services and facilities.	Residential Single-Family
Residential Rural	Up to 1 du/acre	Primary land uses are large lot, single-family residential. Single-family detached dwellings generally occupy lots of at least 1 acre and have limited access to public services and facilities.	Residential Single-Family
Residential Low	Up to 8 du/acre	Predominant housing type is detached single-family developed at low to medium densities. Townhouse and mobile home developments with densities up to 8 du/acre may be appropriate.	Residential Single-Family
Residential Suburban	Up to 2 du/acre	Predominant housing type is detached single-family developed at low densities.	Residential Single-Family
Residential Medium	From 3 du/acre to 14 du/acre	Allows for single-family uses and residential planned development, but not multiple family housing.	Residential Single-Family
Residential High	Up to 32 du/acre	Predominant housing type is multi-family developed at high densities. Allows any residential housing type, including single-family, multi-family, townhouse and mobile home developments up to 32 du/acre.	Residential Multi-Family

Table E-8 (2 of 2)

Planned Land Use Categories – Winchester and Paradise Planning Areas

Planned Land Use	Residential Density	Description	Generalized Planned Land Use
Residential High Rise	Up to 50 du/acre	Predominant housing type is multi-family developed at very high densities. Allows any residential housing type, including single-family, multi-family, townhouse and mobile home developments up to 50 du/acre.	Residential Multi-Family
Commercial Low / Office / Professional	n.a.	Primary land uses are low intensity business and professional services. Typical uses include day care services and offices where medical, legal, financial, and other business/professional services are performed. Retail sales as a primary use is not appropriate. Commercial Low uses may be used as a buffer between more intense commercial and residential land uses.	Commercial
Commercial General	Up to 8 du/acre	Primary land use is mixed commercial. Typical uses include: general retail sales; banks; eating and drinking places; indoor amusements and recreation; miniature golf courses; mini-warehouses; motels (three stories or less); hospitals; car dealerships and office buildings. This land use category may allow Residential Low land uses (up to eight du/acre) where appropriate.	Commercial
Commercial/Industrial	n.a.	Primary land uses are commercial, professional, or industrial developments, which are designed to assure minimal impact on surrounding areas. Major uses in the category include: research and development; food sales and distribution; postal and data processing centers; vehicle repair (inside); and general non-hazardous material warehousing. Outdoor business activities or storage are not appropriate. This category may be used as a buffer between residential and more intense industrial land uses.	Commercial
Commercial Tourist	n.a.	Commercial establishments that primarily cater to tourists, including casinos, resorts, hotels, motels, recreational vehicle parks, time shared condominiums, amusement or theme parks.	Mixed Use
Industrial	n.a.	Primary land uses are medium to high intensity industries. Typical uses include assembly plants; heavy equipment repair, sales, or storage; salvage; outside storage facilities; transmission facilities; and transportation facilities.	Industrial
Parks and Recreation	n.a.	Primary land uses are low intensity public, quasi-public or private outdoor recreation facilities. Examples include: parks, golf courses, tennis courts, and ball fields.	Park/Recreation
Public Facilities	n.a.	Primary land uses are public and quasi-public services and facilities. Examples include: schools, libraries, museums, churches, police/fire stations, and cemeteries.	Public

Notes:

du = dwelling units

n.a. = Not applicable

Source: Clark County Board of County Commissioners. *Winchester and Paradise Land Use and Development Guide*, August 3, 2005

Prepared by: Ricondo & Associates, Inc., April 2008

E.3 Zoning

Zoning designations applicable to the Overflight Area and Area of Disturbance are summarized in **Table E-9**. For unincorporated areas of Clark County, zoning designations and the list of permitted land uses were obtained from *Title 30, Clark County Unified Development Code*. The zoning classifications for the City of Boulder City were obtained from Title 11 of the Boulder City, Nevada, City Code. The zoning classifications for the Cities of Henderson and Las Vegas are also presented in Table E-9. Generalized zoning beneath the Overflight Area is shown on **Exhibit E-2**.

E.3.1.1 South of Sloan Site

Generalized zoning in the vicinity of the Heliport site is depicted on **Exhibit E-3**. As shown, the City of Henderson annexed about 3,455 acres of land immediately north of the Heliport site. Clark County zoning classifications apply to portions of the city that are generally south of Sloan Road. Nearly all of the land on the site and surrounding the site is zoned for rural open land (R-U), which allows for single family residential and agricultural land uses with up to 0.5 dwelling unit per acre. Some mixed-use (H-1) zoning exists on the site, along Las Vegas Boulevard, and along portions of I-15.

E.3.1.2 McCarran International Airport

Exhibit E-4 depicts generalized zoning in the vicinity of McCarran. Most of the area west of McCarran is zoned for light manufacturing (M-1) and limited resort and rental housing developments (H-1). Most of the area east of the airport is zoned for light manufacturing (M-1, M-D), single-family residential (R-E, R-1), medium-density residential (R-2), and limited multi-family residential (R-3) uses. In addition, several business parks are located east of the airport between Sunset Road and Russell Road. Most of the area south of McCarran is zoned R-E and light manufacturing (M-D, M-1), with some limited H-1 zoning along Las Vegas Boulevard.

E.3.1.3 Airport Environs Overlay District—McCarran International Airport

In 1986, the Clark County Board of County Commissioners adopted an Airport Environs Overlay District (AEOD) as part of its zoning ordinance to regulate land uses in the vicinity of McCarran. Most commercial and manufacturing uses are permitted within the areas exposed to day-night average sound level (DNL) 65-75. However, if such facilities are within the areas exposed to DNL 75+, the building must decrease indoor noise by at least 30 dB. Service and recreational uses are restricted if such uses are within the area exposed to DNL 70+. Schools and religious facilities exposed to DNL 65 to 74 are only permitted with noise attenuated construction that decreases indoor noise by 25 to 30 dB. Residential development is permitted within the area exposed to DNL 65-70 only with noise attenuated construction. The Airport Environs Overlay District (amended in 1990 to reflect the projected 1992 Noise Exposure Map prepared for the 1989 14 CFR Part 150 Noise Compatibility Program for the airport) shown on **Exhibit E-5** establishes a range of land uses that are compatible with airport hazard and noise exposure zones AE-65, AE-70, AE-75, and AE-80, which define areas exposed to aircraft noise of DNL 65-70, DNL 70-75, DNL 75-80, and DNL 80 and higher, respectively. Land use compatibility standards within the subdistricts of the Airport Environs Overlay District are summarized in Table 30.48-AE of the Clark County Unified Development Code.

An AEOD for areas of the City of Henderson that are affected by operations at McCarran was adopted on June 15, 1993. The Airport Environs Overlay District adopted by the City of Henderson includes areas exposed to aircraft noise of DNL 65 and higher originating from McCarran based upon the 1997 Noise Exposure Map from the 1994 14 CFR Part 150 Study.

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Table E-9 (1 of 3)

Summary of Existing Zoning within the Vicinity of the Area of Disturbance

General Title	Unincorporated Areas of Clark County	City of Boulder City	City of Henderson	City of Las Vegas	Remarks
Rural Residential	<u>R-U: Rural open land.</u> Single-family residential and agriculture; up to 0.5 du per acre; minimum lot size 80,000 sq. ft. <u>R-A: Residential agricultural.</u> Single-family residential and agriculture; up to 1 du per acre; minimum lot size 40,000 sq. ft. <u>R-E: Rural estates, residential.</u> Single-family residential and agriculture; up to 2 du per acre; minimum lot size 20,000 sq. ft.	<u>A1: Special agricultural.</u> Single-family residential and agriculture; up to 1 du per 4 acres; minimum lot size 4 acres.	<u>RS-1A: Low-density single-family residential.</u> Single-family residential (minimum lot size 1 acre) and limited day care.	<u>R-A: Ranch acres.</u> Low density residential units located on 40,000 sq. ft. minimum lots. <u>R-E: Residence estates.</u> Low density residential units located on 20,000 sq. ft. minimum lots.	Most permitted uses are not compatible with heliport operations.
Single-family Residential	<u>R-D: Suburban estates, residential.</u> Single-family residential; up to 3 du per acre; minimum lot size 10,000 sq. ft. <u>R-1: Single family residential.</u> Single-family residential; up to 5 du per acre; minimum lot size 5,200 sq. ft. in R-1. <u>R-2: Medium density residential.</u> Single- and multi-family residential; up to 8 du per acre; minimum lot size 7,000 sq. ft. RUD: Residential Urban Density Compact-single-family residential; up to 14 du per acre; minimum lot size 2000 sq. ft.	<u>R1-7: Low-density single-family residential.</u> Single-family residential (minimum lot size 7,000 sq. ft.). <u>R1-8: Low-density single-family residential.</u> Single-family residential (minimum lot size 8,000 sq. ft.). <u>R1-10: Low-density single-family residential.</u> Single-family residential (minimum lot size 10,000 sq. ft.). <u>R1-15: Low-density single-family residential.</u> Single-family residential (minimum lot size 15,000 sq. ft.). <u>R1-20: Low-density single-family residential.</u> Single-family residential (minimum lot size 20,000 sq. ft.). <u>R1-40: Low-density single-family residential.</u> Single-family residential (minimum lot size 40,000 sq. ft.). <u>R1-80: Low-density single-family residential.</u> Single-family residential (minimum lot size 80,000 sq. ft.).	<u>RS-2: Low-density single-family residential.</u> Single-family residential, up to 2 du per acre. <u>RS-4: Low-density single-family residential.</u> Single-family residential, up to 4 du per acre. <u>RS-6: Low-density single-family residential.</u> Single-family residential, up to 6 du per acre.	<u>R-D: Single-family residential-restricted.</u> Low density single-family units on 11,000 sq. ft. minimum lots. <u>R-1: Single-family residential.</u> Single-family units on 6,500 sq. ft. minimum lots. <u>R-CL: Single-family compact-lot.</u> Single-family units on 3,500 sq. ft. minimum lots.	Most permitted uses are not compatible with heliport operations.
Multi-family Residential	<u>R-3: Multiple-family residential.</u> Single- and multi-family residential; up to 18 du per acre; minimum lot size 7,000 sq. ft. <u>R-4: Multiple-family residential (high density).</u> Single- and multi-family residential; up to 25 du per acre; minimum lot size 7,000 sq. ft. <u>R-5: Apartment residential.</u> Single- and multi-family residential; up to 50 du per acre; minimum lot size 7,000 sq. ft.	<u>R2: Low-density multiple-family residential.</u> Two-family residential (minimum lot size 8,000 sq. ft.). <u>R3: Low or high-density multiple-family residential.</u> Multiple-family residential including apartments and condos (minimum lot size 2,500 sq. ft.).	<u>RM: Medium-density residential.</u> Medium-density residential uses, including single-family housing, duplexes, townhouses, apartments, or cluster housing at a density of up to 8 du per acre in RM-8 district, 10 du per acre in RM-10 district, 16 du per acre in RM-16 district. <u>RH: High-density residential.</u> Single-family housing, duplexes, townhouses, apartments, or cluster housing at a density of up to 20 du per acre in RH-20 district, 24 du per acre in RH-24 district, 30 du per acre in RH-30 district, 36 du per acre in RH-36 district.	<u>R-2: Medium-low density.</u> Medium to low density single-family units and duplex units on 6,500 sq. ft. minimum lots; up to 12 du per acre. <u>R-3: Medium density residential and apartment.</u> Multi-family units on 6,500 sq. ft. minimum lots; up to 25 du per acre. <u>R-4: High density residential and apartment.</u> Multi-family units on 6,500 sq. ft. minimum lots; up to 50 du per acre. <u>R-5: Apartment.</u> High density multi-family units on 7,000 sq. ft. minimum lots.	Most permitted uses are not compatible with heliport operations.
Mobile Home Residential	<u>R-T: Manufactured home residential.</u> Subdivided lots: up to 5 du per acre; minimum lot size 5,200 sq. ft. Manufactured home park: up to 8 du per acre; minimum lot size 3,000 sq. ft. of 4,000 sq. ft for doublewide unit. <u>R-V-P: Recreational vehicle park.</u> Temporary or transient lodging in recreational vehicles; up to 20 du per acre.	<u>MP: Mobile home park.</u> Medium-density residential development for mobile homes; minimum site area of 10 acres; minimum lot size per mobile home 5,000 sq. ft. <u>ME: Mobile home estate.</u> Single-family residential owner-occupied mobile homes; minimum site area of 15 acres; minimum lot size per mobile home 7,000 sq. ft. <u>RV: Recreational vehicle park.</u> Temporary or transient lodging in recreational vehicles; up to 15 du per acre.	<u>RX-5: Mobile home.</u> Up to 5 du per acre. <u>RX-8: Mobile home.</u> Up to 8 du per acre.	<u>R-MH: Mobile/Manufactured home residence.</u> Subdivision lots primarily for mobile or manufactured homes on 6,500 sq. ft. minimum lots. <u>R-MHP: Residential mobile/ manufactured home park.</u> Medium density residential district designed primarily for the rental of spaces for occupied mobile or manufactured homes on 4,000 sq. ft. minimum lots.	Most permitted uses are not compatible with heliport operations.

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Table E-9 (2 of 3)
Summary of Existing Zoning within the Vicinity of the Area of Disturbance

General Title	Unincorporated Areas of Clark County	City of Boulder City	City of Henderson	City of Las Vegas	Remarks
Mixed Use/ Commercial	<u>CRT: Commercial residential transitional.</u> Intended to preserve existing single family residential buildings for commercial reuse as a transition between viable residential districts and major streets. <u>C-2: General commercial.</u> Established to accommodate a full range of commercial uses, or mixed commercial and residential uses. <u>H-1: Limited resort and apartment.</u> Provided for the development of gaming enterprises, compatible commercial, and mixed commercial/residential uses. <u>H-2: General highway frontage.</u> Established to provide for a variety of residential, office, and commercial uses. <u>U-V: Urban village.</u> Intended to accommodate a mixture of residential, commercial/ employment, and recreational uses.		<u>CH: Highway commercial.</u> To provide sites for the auto-oriented commercial uses, including casinos, hotels, motels, resort complexes, commercial recreation facilities, restaurants, travel trailer and RV facilities, and limited residential development in a mixed-use project. <u>CT: Tourist commercial.</u> To provide sites for visitor-oriented uses, including casinos, hotels, motels, resort complexes, commercial recreation facilities, restaurants, travel trailer and RV facilities, and limited residential development in a mixed-use project.		Some permitted uses (such as dwellings) are not usually compatible with heliport operations.
Commercial	<u>C-P: Office and professional.</u> Provided for the development of office and professional uses as a buffer between the more intensive commercial districts and the residential districts. <u>C-1: Local business.</u> Provided for the development of retail business uses or personal services.	<u>BC: Business commercial.</u> Provided for the development of businesses or light industrial uses. <u>C1: Neighborhood commercial.</u> To provide for the necessary neighborhood needs of limited goods and services. <u>C2: General commercial.</u> To provide for the development of the business district.	<u>CN: Neighborhood commercial.</u> To provide sites for businesses serving the daily needs of nearby residential areas and for small-scale offices. <u>CO: Commercial office.</u> To provide areas primarily for high-quality, low-rise office development. <u>CC: Community commercial.</u> To provide sites for community and regional retail shopping centers containing a wide variety of commercial establishments. <u>CD: Downtown commercial.</u> To provide a full-range of retail and service uses, hotels and casinos, and other commercial activities appropriate for downtown Henderson. <u>CA: Auto mall commercial.</u> To provide sites for new automobile dealerships and related uses.	<u>P-R: Professional office and parking.</u> Transitional zone to allow low intensity administrative and professional offices. <u>N-S: Neighborhood service.</u> Convenience retail shopping, services and professional offices principally serving neighborhood needs. <u>O: Office.</u> Office uses, supporting service uses and low intensity commercial uses performing administrative, professional and personal services. <u>C-D: Designed commercial.</u> Light commercial uses in harmony with the neighborhood. <u>C-1: Limited commercial.</u> Retail shopping and personal services located on the periphery of residential neighborhoods. <u>C-2: General commercial.</u> Retail, service, automotive, wholesale, office and other general business uses of an intense character.	Generally compatible with heliport operations.
Industrial	<u>M-D: Designed manufacturing.</u> Established to provide area suitable for the development of light manufacturing establishments with limited outside uses. <u>M-1: Manufacturing.</u> Established to provide area suitable for the development of light manufacturing establishments. <u>M-2: Industrial.</u> Established to provide areas suitable for the most intense manufacturing and industrial activities.	<u>CM: Commercial manufacturing (light industrial).</u> Established to provide area suitable for the development of light manufacturing establishments with limited outside uses.	<u>IL: Limited industrial.</u> To provide areas appropriate for low-intensity industrial uses, including light manufacturing, warehousing and distribution, research and development, and commercial services. <u>IG: General industrial.</u> To provide and protect existing industrial sites and allow for continued operation of existing general industry, manufacturing, extraction, salvage, and related activities. <u>IP: Industrial park.</u> To provide and protect sites for research and development facilities and limited industrial activities, including non-nuisance production, distribution and storage of goods.	<u>C-PB: Planned business park.</u> Industrial uses, including light manufacturing, assembling and processing, warehousing and distribution, research, development, testing laboratories, and ancillary commercial uses. <u>C-M: Commercial/industrial.</u> General commercial and restricted industrial district designed to provide for a variety of compatible business, warehouse, wholesale, office, and limited industrial uses. <u>M: Industrial.</u> Heavy manufacturing industries located away from all residential development.	Generally compatible with heliport operations.

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Table E-9 (3 of 3)

Summary of Existing Zoning within the Vicinity of the Area of Disturbance

General Title	Unincorporated Areas of Clark County	City of Boulder City	City of Henderson	City of Las Vegas	Remarks
Public	<u>P-F: Public facility.</u> Public and quasi-public services and facilities.	<u>GM: Government.</u> Areas reserved for Municipal electrical distribution facilities, water system facilities, new facilities for police, fire and other functions as needed, schools and similar related governmental uses. <u>GP: Government-park.</u> All dedicated and/or designated park and recreational areas.	<u>PS: Public and semipublic.</u> Public and quasi-public services and facilities.	<u>C-V: Civic.</u> Provided for the continued public uses and the development of new schools, libraries, public parks, public flood control facilities, police, fire, electrical transmission facilities.	Some permitted uses (such as dwellings) are not usually compatible with the heliport operations.
Open Space	<u>O-S: Open space.</u> Single-family dwellings on 5-acre minimum lots; flood control channels; scenic drives; recreation areas; agriculture and cattle grazing.	<u>GO: Government-open space.</u> Public and quasi-public uses and preserve open space.			Some permitted uses (such as dwellings) are not usually compatible with heliport operations.
Overlay	<u>AE: Airport environs overlay.</u> See Section 30.48.010 of the <i>Unified Development Code</i> . Airport airspace overlay. See Section 30.48.090 of the <i>Unified Development Code</i> . RNP: Residential neighborhood preservation overlay. See Section 30.48.170 of the <i>Unified Development Code</i> . Gaming enterprise. See Section 30.48.240 of the <i>Unified Development Code</i> . <u>MU: Mixed use overlay.</u> See Section 30.48.700 of the <i>Unified Development Code</i> .		AE: Airport environs overlay. See Section 19.5.2 of the <i>Development Code</i> . MP: Master plan overlay. See Section 19.5.3 of the <i>Development Code</i> . G: Gaming enterprise overlay. See Section 19.5.5 of the <i>Development Code</i> . E: Efficiency lot overlay. See Section 19.5.6 of the <i>Development Code</i> . RD: Redevelopment overlay. See Section 19.5.7 of the <i>Development Code</i> . C: Center overlay. See Section 19.5.8 of the <i>Development Code</i> . H: Hillside overlay. See Section 19.5.9 of the <i>Development Code</i> . See Section 19.5.10 of the <i>Development Code</i> . PUD: Planned unit development overlay. See Section 19.5.4 of the <i>Development Code</i> . DH: Development holding. See Section 19.5.11 of the <i>Development Code</i> .	CBD: Central business district overlay. See Section 19A.06.060 of the <i>Development Code</i> . G-O: Gaming enterprise overlay. See Section 19A.06.050 of the <i>Development Code</i> . A-O: Airport overlay. See Section 19A.06.080 of the <i>Development Code</i> . H: Historic designation. See Section 19A.06.090 of the <i>Development Code</i> . Downtown casino overlay. See Section 19A.06.100 of the <i>Development Code</i> . T-C: Town center. See Section 19A.06.110 of the <i>Development Code</i> .	Not depicted on maps.
Planned unit development/other	P-C: Planned community overlay. See Section 30.48.220 of the <i>Unified Development Code</i> .			P-C: <u>Planned community.</u> Established to permit and encourage the development of comprehensively planned communities, with a minimum of 3,000 contiguous acres of land under one ownership or control. R-PD: Residential planned development. See Section 19A.06.040 of the <i>Development Code</i> . PD: Planned development. See Section 19A.06.050 of the <i>Development Code</i> .	Not depicted on maps.

Notes:

du = dwelling units

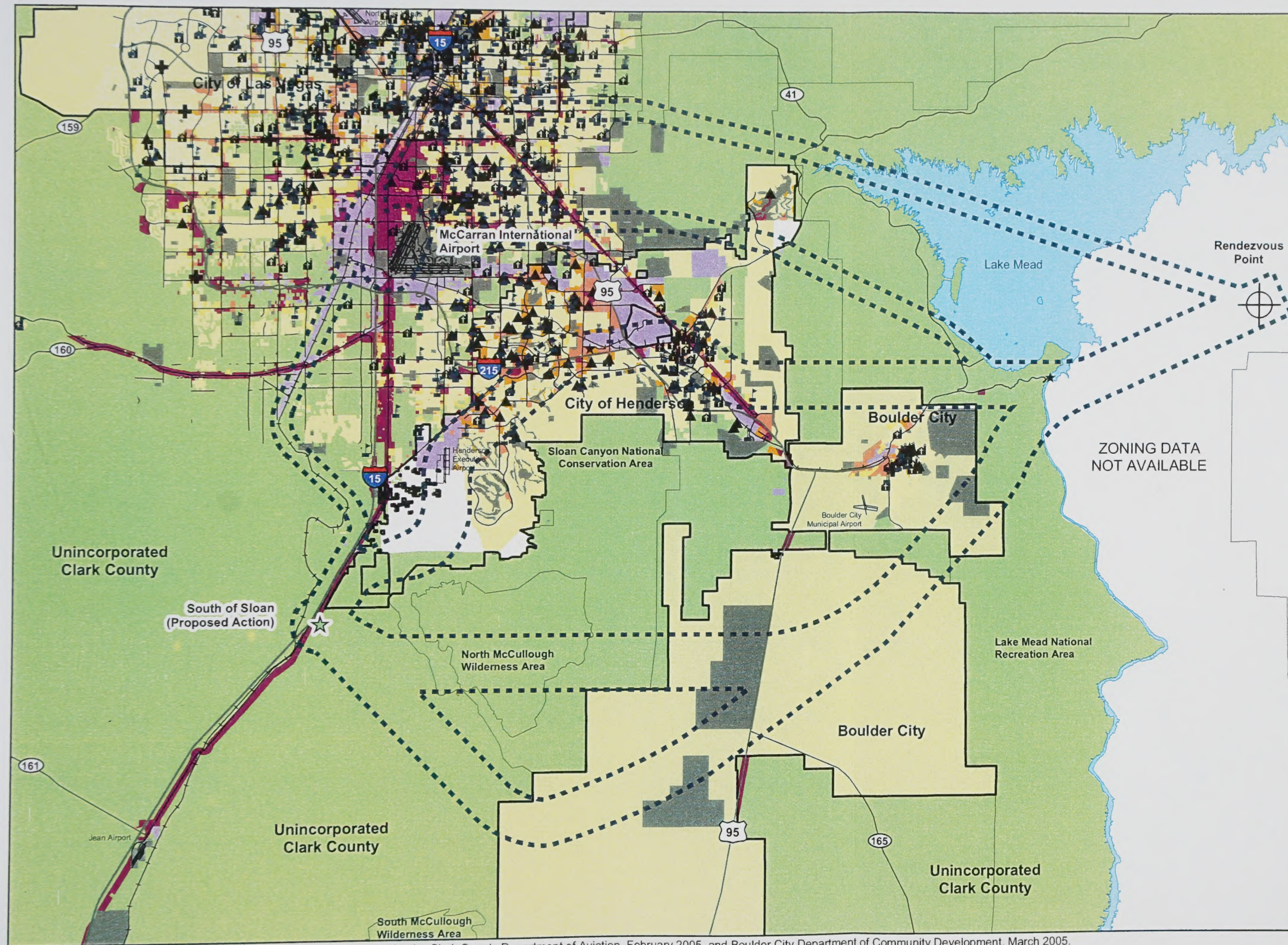
sq. ft. = square feet

See zoning ordinances for conditionally permitted uses.

Sources: Clark County, Nevada, *Title 30, Clark County Unified Development Code*, August 2001, as amended; City of Henderson, Nevada, *Title 19, Development Code (Zoning)*, July 2006; City of Las Vegas, Nevada, *Chapter 19, Zoning Code*, November 1998; City of Boulder City, Nevada, *City Code, Title 11*, February 2005

Prepared by: Ricondo & Associates, Inc., April 2008

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Legend

★ Proposed heliport site

Overflight area

Generalized zoning categories

Rural residential

Single-family residential

Multi-family residential

Mobile home residential

Mixed use

Commercial

Industrial

Public

Park / open space

Noise sensitive facilities

School

Religious facility

Hospital

Structure listed in National Register of Historic Places

Day care

Other features

Jurisdictional boundary

Street

Interstate highway

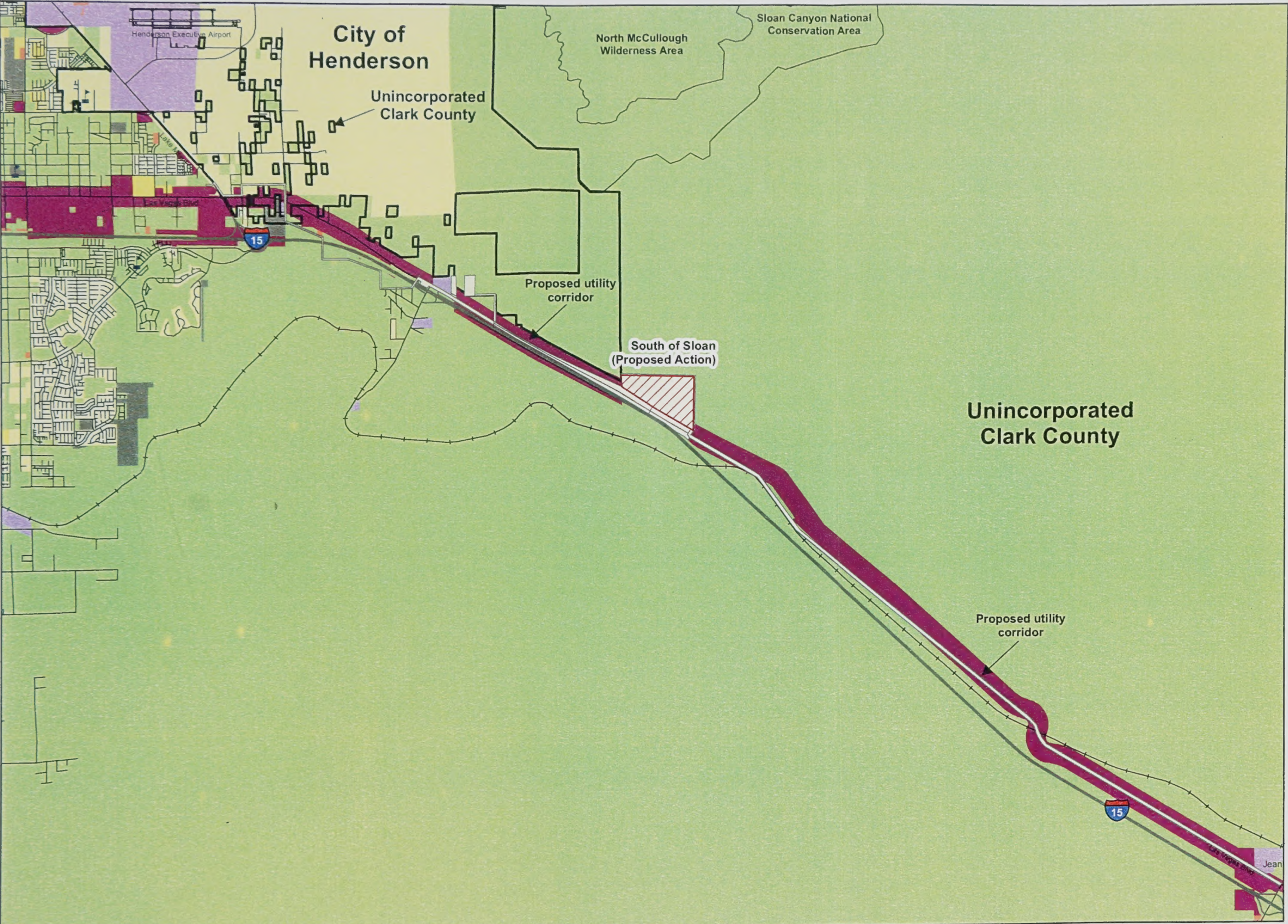
U.S. route

Railroad

Source: Ricondo & Associates, Inc., based on information provided by the Clark County Department of Aviation, February 2005, and Boulder City Department of Community Development, March 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.

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↑
north

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Legend

Proposed heliport site area

Area of disturbance

Note: The area of disturbance includes areas that could be affected by construction or the extension of utilities to the site.

Generalized existing land uses

- | | |
|---------------------------|-------------------|
| Rural residential | Commercial |
| Single-family residential | Industrial |
| Multi-family residential | Public |
| Mobile home residential | Park / open space |
| Mixed use | |

Noise sensitive facilities

- School
- Religious facility
- Hospital
- Structure listed in National Register of Historic Places
- Day care

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Sources: Ricondo & Associates, Inc., August 2007, based on information provided by the Clark County Department of Aviation, February 2005; SWCA Environmental Consultants (area of disturbance).
Prepared by: Ricondo & Associates, Inc., April 2008.

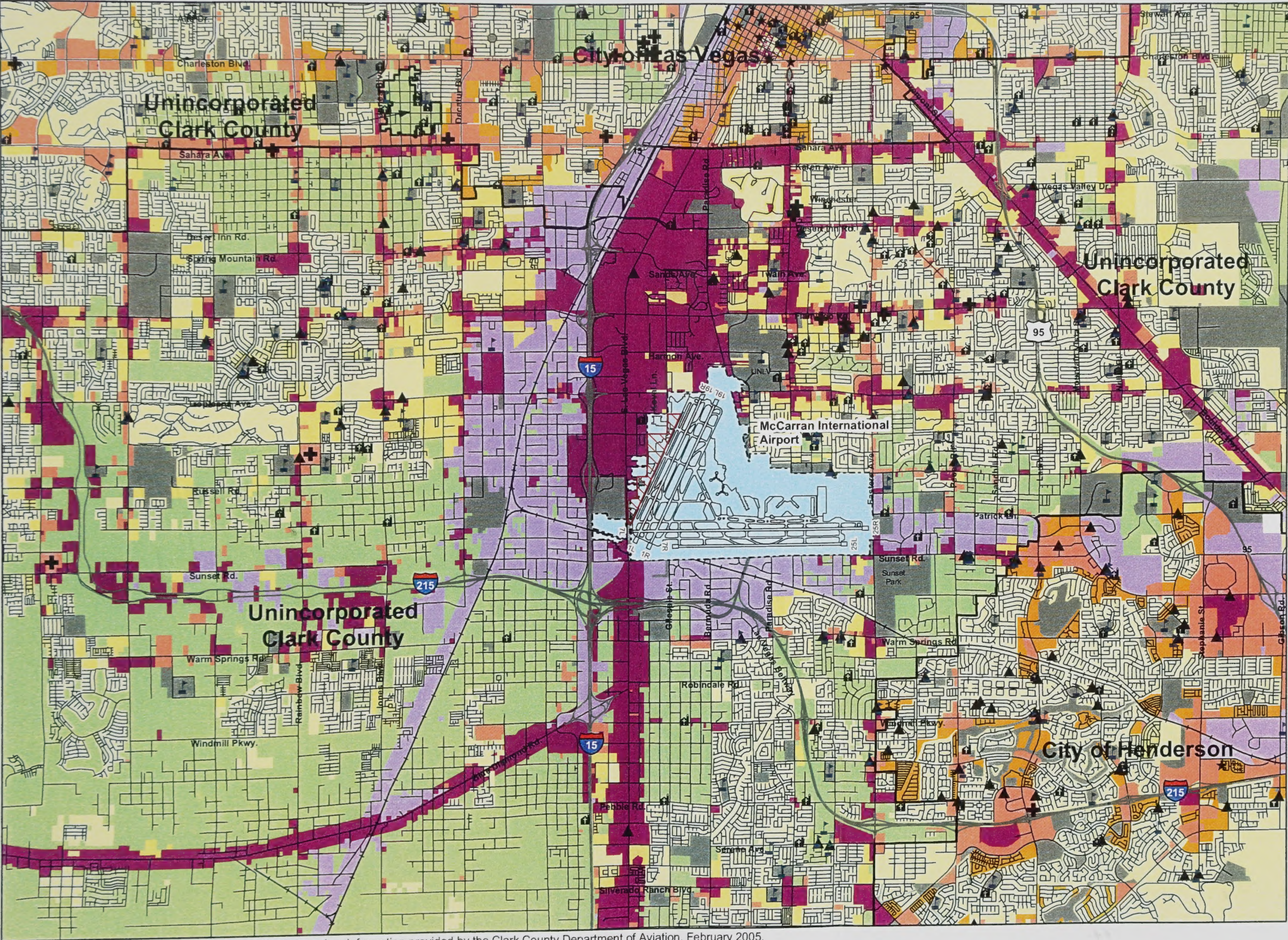
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Exhibit E-3

Generalized Zoning
in the Vicinity of the Proposed Heliport Site

December 2008

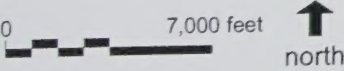
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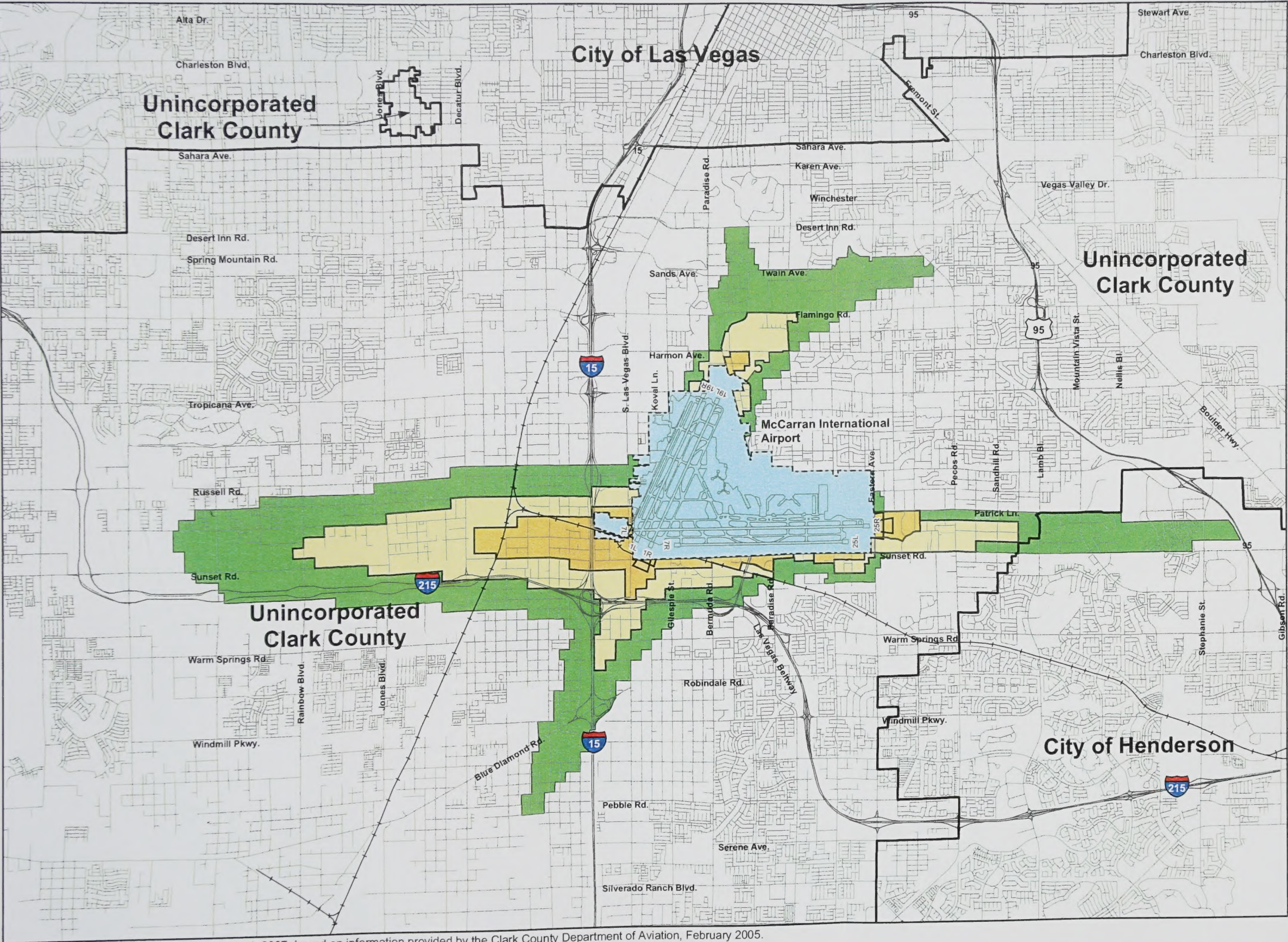
Legend

- Existing heliport site area
- Generalized zoning categories
 - Rural residential
 - Single-family residential
 - Multi-family residential
 - Mobile home residential
 - Mixed use
 - Commercial
 - Industrial
 - Public
 - Park / open space
- Noise sensitive facilities
 - School
 - Religious facility
 - Hospital
 - Structure listed in National Register of Historic Places
 - Day care
- Other features
 - Jurisdictional boundary
 - Street
 - Interstate highway
 - U.S. route
 - Railroad
- Airport property

Sources: Ricondo & Associates, Inc., August 2007, based on information provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.



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Legend

- AE-65
- AE-70
- AE-75
- Airport property

Notes: Most commercial/industrial uses are permitted in the Airport Environs Overlay District. Noise attenuation measures are required for offices and public portions of buildings in AE-70 and AE-75.

Noise sensitive commercial uses (e.g., medical health, educational, and religious) are not permitted in the areas exposed to DNL 75+, and require noise attenuation in the areas exposed to DNL 70-75 and DNL 65-70.

Residential developments having densities higher than two dwelling units per acre are not permitted in the areas exposed to DNL 70-75, with the exception of sites for which residential zoning was approved before the Airport Environs Overlay District was adopted by Clark County in 1986.

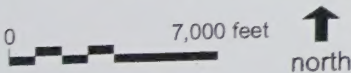
All residential development is permitted in the areas exposed to DNL 65-70 with implementation of noise attenuation measures. Because of recognized noise sensitivity, however, residential development is not encouraged in zones exposed to DNL 65 and above.

AE-65 = Airport Environs Overlay District DNL 65
AE-70 = Airport Environs Overlay District DNL 70
AE-75 = Airport Environs Overlay District DNL 75
DNL = Day-Night Average Sound Level, in A-weighted decibels

Other features

- Jurisdictional boundary
- Street
- Interstate highway
- U.S. route
- Railroad

Sources: Ricondo & Associates, Inc., March 2007, based on information provided by the Clark County Department of Aviation, February 2005.
Prepared by: Ricondo & Associates, Inc., April 2008.



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E.4 Compatible Land Use Assurance Letter

A letter from the Clark County Board of County Commissioners states that the County would provide assurance to restrict the use of land adjacent to the Heliport site to purposes compatible with helicopter operations, and that the County would work closely with other local jurisdictions to ensure the adoption of appropriate land use regulations near the Heliport. A copy of the letter is provided as **Attachment E-1**.



RORY REID
Chairman

Board of County Commissioners

CLARK COUNTY GOVERNMENT CENTER
500 S GRAND CENTRAL PKY
BOX 551601
LAS VEGAS NV 89155-1601
(702) 455-3500 FAX: (702) 383-6041

May 6, 2008

Mr. Edward Agnew, Acting Manager
Federal Aviation Administration
Airports District Office
831 Mitten Road, Room 210
Burlingame, CA 94010-1303

Re: Proposed Construction and Operation of a Southern Nevada Regional Heliport

Dear Mr. Agnew:

The Clark County Board of Commissioners, as proposed owner of a Southern Nevada Regional Heliport at the South of Sloan Site, located approximately five miles south of St. Rose Parkway (a portion of Assessor Parcel No, 204-01-000-004), makes the following statement of compatible land use assurance as required by Section 511 (a) (5) of the Airport and Airway Improvement Act of 1982:

Clark County provides assurance that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the proposed South of Sloan Heliport Site to activities and purposes compatible with normal heliport operations, both existing and in the future. Clark County also provides assurance that it will work closely with the other jurisdictions within Clark County to ensure that they also adopt appropriate land use regulations near the South of Sloan Site.

If you have any questions regarding this matter, please contact Randall H. Walker, Director of Aviation, at (702) 261-5150.

Sincerely,

A handwritten signature in black ink, appearing to read "Rory Reid", is written over the word "Sincerely,".

RORY REID
Chairman, Board of County Commissioners
Clark County, NV

Appendix F. Air Quality Analysis

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Appendix F. Air Quality Analysis

This appendix documents the methods used to calculate emissions of carbon monoxide (CO), particulate matter less than ten microns in diameter (PM₁₀), particulate matter less than 2.5 microns in diameter (PM_{2.5}), volatile organic compounds (VOCs), oxides of nitrogen (NO_x), and oxides of sulfur (SO_x) for existing conditions, the Proposed Action, and the No Action alternative. The emissions analysis was conducted to develop emissions inventories pursuant to the *National Environmental Policy Act of 1969*, and to determine whether emissions associated with construction and operation of a regional heliport and related facilities at the South of Sloan site (Heliport site) would exceed applicable *de minimis* thresholds as documented in the U.S. Environmental Protection Agency's (U.S. EPA's) general conformity regulations.

This appendix also documents the methods used to perform dispersion analyses for CO and PM₁₀ for the Proposed Action and No Action alternative. Dispersion analyses were conducted to determine if localized pollutant concentrations would exceed the National Ambient Air Quality Standards (NAAQS) under the Proposed Action or No Action alternative.

F.1 Emissions Analysis

Total emissions associated with existing helicopter operations at McCarran International Airport (McCarran) were calculated for the existing condition (2004). Estimates of construction-related emissions were developed for the Proposed Action. Emissions estimates were also developed for the Proposed Action and No Action alternative for two future years (2011 and 2017). Sources of emissions are identified in **Table F-1** and are divided into two categories: heliport operational emissions and construction emissions, which are discussed in Sections F.1.1 and F.1.2, respectively.

Table F-1

Sources of Emissions

- Heliport operational emissions
 - Helicopter operations
 - Ground support equipment (GSE)
 - On-road motor vehicles used to transport helicopter air tour passengers (including entrained road dust)
 - Point sources (e.g., fuel tanks)
- Construction emissions
 - On-road construction equipment
 - Nonroad construction equipment
 - Land development
 - Wind erosion
 - Asphalt paving

Source: Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.1 Heliport Operational Emissions

Airport operational emissions were calculated using the Emissions and Dispersion Modeling System (EDMS) Version 4.3. EDMS is the U.S. EPA's preferred guideline model for air quality

analyses at airports/heliports. EDMS is a combined emissions and dispersion model developed by the Federal Aviation Administration (FAA) in cooperation with the United States Air Force (USAF). The primary applications of the model are to generate an inventory of emissions caused by sources on and around an airport and to calculate pollutant concentrations in the surrounding environment. EDMS data tables include emission factors for civilian and military aircraft¹, ground support equipment, and motor vehicles.

The EDMS emissions inventory module incorporates U.S. EPA-approved methodologies for calculating aircraft emissions, on- and off-road vehicle emissions, and stationary source emissions. Pollutants currently included in EDMS for emissions inventories are CO, total hydrocarbons (THC), non methane hydrocarbons (NMHC), VOC, NO_x, SO_x, PM₁₀, and PM_{2.5}.

EDMS was used to estimate heliport-related emissions from the following sources:

- Helicopter operations
- GSE
- Ground access vehicles (associated with movements on roadways and in parking lots)
- Point sources

The methodologies and assumptions used to develop the emissions inventories are described in the sections that follow.

F.1.1.1 Helicopter Operations

Annual helicopter emissions are a function of the number of annual helicopter operations, the helicopter fleet mix (types of helicopters/engines used), the length of time helicopters spend in various modes (taxi/idle, takeoff, climbout, approach, and landing), and the emission rates of the engine. The EDMS 4.3 database contains a list of aircraft types (airframes) and engine types for use in air quality analyses.

Helicopter LTO Cycles and Fleet Mix

According to helicopter air tour operator interviews and surveys, two primary helicopter models are used for helicopter air tour operations: the Eurocopter AS350 and the Eurocopter EC130. EDMS 4.3 has a very limited database of civilian helicopters and the database does not include the AS350 or EC130 helicopters. The Bell 206, with a 250B17B engine, was selected to represent all helicopter air tour operations for this air quality analysis since it was determined to be the most representative civilian helicopter in the database.

To determine existing and projected pollutant emissions from helicopter operations, EDMS requires input data in terms of annual landing and takeoff (LTO) cycles. LTO cycles are one-half the number of total helicopter operations, because one helicopter operation represents one takeoff, landing, or touch-and-go. Helicopter LTO cycles at McCarran International Airport in 2004 were used to represent existing conditions in this environmental assessment and were based on actual helicopter operations data collected by AirScene.² Forecasts of annual LTO cycles in 2011 and 2017 were derived from the annual forecasts presented in Chapter III of this EA.

¹ As used in report, "aircraft" includes helicopters.

² AirScene is a proprietary software package developed and licensed by Rannoch Corporation that provides data to the Clark County Department of Aviation (CCDOA) regarding aircraft and helicopter operations at McCarran International Airport. The CCDOA has used the software package since July 2000.

Existing and forecast levels of helicopter LTO cycles under the Proposed Action and No Action alternative are presented in **Table F-2**. As shown in Table F-2, the number of Grand Canyon tour LTO cycles at the Heliport site under the Proposed Action is projected to be 29,500 in 2011 and 37,300 in 2017. It was assumed that the operators of Las Vegas Strip tours would not relocate to the proposed Heliport site from McCarran. Las Vegas Strip tours would continue to be accommodated at McCarran under the Proposed Action – 8,400 annual LTO cycles in 2011 and 9,100 annual LTO cycles in 2017. Under the Proposed Action there would be 9,800 Grand Canyon tour LTO cycles at McCarran in 2011 and 12,400 annual Grand Canyon tour LTO cycles in 2017. Under the Proposed Action it is anticipated that some helicopter LTO cycles, both Grand Canyon tours and Las Vegas Strip tours, would be accommodated at other locations in the region (11,100 annual LTO cycles in 2011 and 15,600 annual LTO cycles in 2017). These helicopter movements were not assessed or evaluated in this environmental assessment.

The number of Grand Canyon tour LTO cycles at McCarran under the No Action alternative is projected to be 29,500 in 2011 and 37,300 in 2017. Las Vegas Strip tours would continue to be accommodated at McCarran under the No Action alternative – 8,400 annual LTO cycles in 2011 and 9,100 annual LTO cycles in 2017. It is anticipated that some helicopter LTO cycles, both Grand Canyon tours and Las Vegas Strip tours, would be accommodated at other locations in the region under the No Action alternative (20,900 annual LTO cycles in 2011 and 28,000 annual LTO cycles in 2017).

Table F-2

Annual Helicopter Air Tour LTO Cycles – Proposed Action and No Action Alternative

Year	McCarran International Airport		Heliport Site ^{1/}		Other Facility ^{2/}		Total	
	Grand Canyon Tours	Las Vegas Strip Tours	Grand Canyon Tours	Las Vegas Strip Tours	Grand Canyon Tours	Las Vegas Strip Tours	Grand Canyon Tours	Las Vegas Strip Tours
Existing Conditions								
2004	33,190	11,501	—	—	—	—	33,190	11,501
Proposed Action								
2011	9,800	8,500	29,500	—	4,400	6,700	43,700	15,200
2017	12,400	9,100	37,300	—	5,500	10,100	55,200	19,200
No Action Alternative								
2011	29	8,500	—	—	14,200	6,700	43,700	15,200
2017	37,300	9,100	—	—	17,900	10,100	55,200	19,200

Notes:

LTO = Landing and takeoff. One LTO cycle equals two operations: a landing and a takeoff.

1/ It was assumed that Las Vegas Strip tours would not be accommodated at the proposed Heliport site.

2/ Not evaluated in the environmental assessment.

Sources: Ricondo & Associates, Inc., 2007, based on *Forecasts of Grand Canyon Helicopter Air Tour Operations and Passengers*. February 7, 2007 [I-12].

Prepared by: Ricondo & Associates, Inc., April 2008

Helicopter Time in Mode

The EDMS recognizes four modes that constitute a complete LTO cycle: takeoff, climbout, approach, and taxi. The helicopter time in mode is the time, in minutes, a helicopter spends in any one of these modes during an LTO cycle. The taxi mode consists of taxi time and queue time. The taxi and queue time is the time spent in hover taxi and queue between gates and Final Approach and Takeoff Areas (FATOs). Of the four modes, the taxi mode is the most variable, due to its airport/heliport specific nature, and accordingly the user may modify the time. The approach and climbout time varies depending on the aircraft performance and the mixing height. Mixing height is the vertical distance between the earth's surface and the height to which convectional movements within the atmosphere extend. The takeoff mode represents the time spent between the initiation of takeoff and 1,000 feet above ground level (AGL) and is dependent on aircraft performance.

The time in mode of aircraft in the EDMS database are based on either of two methodologies: the International Civil Aviation Organization (ICAO) and U.S. EPA default or performance data from methodology presented in the Society of Automotive Engineers (SAE) Aerospace Information Report (AIR) 1845. There is a lack of consistent performance data for helicopters. ICAO/U.S. EPA default times per LTO cycle for the Bell 206 helicopter were used in the air quality analysis, and are presented in **Table F-3**.

Table F-3

Times in Mode for the Bell 206 Helicopter

Mode	Time per LTO Cycle (minutes) ^{1/}
Takeoff	2.17
Climbout	4.33
Approach	6.50
Taxi ^{2/}	7.00

Notes:

1/ LTO = Landing and takeoff. One LTO cycle equals two operations: a landing and a takeoff.

2/ Taxi time includes taxi time and queue time.

Source: The Emissions and Dispersion Modeling System (EDMS) Version 4.3.

Prepared by: Ricondo & Associates, Inc., April 2008

Helicopter Engine Emissions Rates

EDMS Version 4.3 includes default emission indices (in grams/kilogram of fuel burned) for each aircraft engine in the database. Emission indices are available for CO, VOC, NO_x, and SO_x. **Table F-4** presents the default emission indices, by mode, for the Bell 206 with a 250B17B engine.

EDMS Version 4.3 is not capable of calculating PM₁₀ emissions for helicopters. However, the U.S. EPA has developed some guidance for calculating aircraft PM₁₀ emissions. The primary source of information on aircraft PM₁₀ emissions is the U.S. EPA document, AP-42, *Compilation of Air Pollutant Emission Factors*, Volume II: *Mobile Sources*. AP-42 contains detailed information regarding fuel flow rates and pollutant emissions (CO, HC, NO_x, SO_x, and PM₁₀) for a variety of aircraft engines. However, AP-42 contains particulate emission factors for only nine types of commercial aircraft engines and eight types of military aircraft engines.

Particulate emission factors for the 250B17B engine are not available in AP-42. The only propeller/turboprop-driven aircraft engine for which particulate emission factors are available is the

TPE331-3 engine, manufactured by Allied Signal. This engine was used for calculating helicopter PM₁₀ emissions. Particulate emission factors, by mode, for the TPE331-3 engine are presented in **Table F-5**.

Table F-4

Emission Indices by Mode for the Bell 206 Helicopter with a 250B17B Engine

Mode	Emission Indices (g/Kg) per LTO Cycle ^{1/}			
	Carbon Monoxide (CO)	Hydrocarbons (HC) ^{2/}	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)
Approach	47.20	5.20	2.20	0.54
Climbout	9.02	0.40	5.96	0.54
Takeoff	7.81	0.30	6.60	0.54
Taxi ^{3/}	97.00	20.00	1.00	0.54

Notes:

1/ LTO = Landing and takeoff. One LTO cycle equals two operations: a landing and a takeoff.

2/ EDMS calculates emissions of volatile organic compounds (VOC) by applying a conversion factor to hydrocarbons (HC).

3/ Taxi time includes taxi time and queue time.

Source: The Emissions and Dispersion Modeling System (EDMS), Version 4.3.

Prepared by: Ricondo & Associates, Inc., April 2008

Table F-5

Particulate (PM₁₀) Emission Factors by Mode for the TPE331-3 Engine

Mode	PM ₁₀ Emission Factors (Kg/hr) per LTO Cycle ^{1/}
Approach	0.27
Climbout	0.27
Takeoff	0.36
Taxi ^{2/}	0.14

Notes:

1/ LTO = Landing and takeoff. One LTO cycle equals two operations: a landing and a takeoff.

2/ Taxi time includes taxi time and queue time.

Source: U.S. EPA, AP-42, *Compilation of Air Pollutant Emission Factors*, Volume II: *Mobile Sources*, Fourth Edition. September 1985.

Prepared by: Ricondo & Associates, Inc., April 2008

The calculation of aircraft PM₁₀ emissions requires three pieces of information: time in mode, number of engines on each aircraft, and the emission factors for each engine type. Time in mode estimates were based on default values contained in EDMS, as described earlier in this section.

Equation F-1 was used to calculate particulate emissions for the Bell 206 helicopter.

Although EDMS Version 4.3 does not estimate particulate emissions for helicopters, user-created helicopters/engines may be created that incorporate PM₁₀ emission indices. This allows EDMS to integrate PM₁₀ emissions into emission inventories and dispersion analyses. For the air quality analysis, a user-created helicopter was created based on the Bell 206 helicopter with a 250B17B engine. All aspects of the user-created helicopter, including times in mode and emission indices, were identical to the EDMS system aircraft, except PM₁₀ emission indices were included.

To derive emission indices for PM₁₀, it was necessary to first calculate PM₁₀ emissions, by mode, using Equation F-1. **Equation F-2** was then used to solve for PM₁₀ emission indices, by mode.

These emission indices were incorporated into the user-defined helicopter/engine combination, allowing PM₁₀ emissions to be incorporated into the model. For helicopters, PM_{2.5} emissions are assumed to be equal to PM₁₀ emissions. The resultant PM₁₀ emission indices, by mode, for the user-created Bell 206 helicopter are presented in **Table F-6**.

Equation F-1

Aircraft Particulate (PM₁₀) Emissions Calculation Equation

$$PM_m = (NE_a)(TIM_m)(EF_m)$$

where:

PM_m = PM₁₀ emissions from one aircraft type for mode m during one LTO cycle

NE_a = Number of engines on aircraft a

TIM_m = Time in mode in hours for specified mode m for a single engine

EF_m = Emission factor of the engine type in kg/hr for the specified mode m

Source: U.S. EPA, AP-42, Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition. September 1985.
Prepared by: Ricondo & Associates, Inc., April 2008

Equation F-2

Aircraft Particulate (PM₁₀) Emission Indices Calculation Equation

$$EI_m = PM_m / [(60/1000)(NE_a)(FF_m)(TIM_m)]$$

where:

EI_m = Emission index of the engine type in g/Kg of fuel burned for the specified mode m

PM_m = PM₁₀ emissions from one aircraft type for mode m during one LTO cycle

60 = Number of seconds per minute

1000 = Number of grams per kilogram

NE_a = Number of engines on aircraft a

FF_m = Fuel flow rate of the engine type in Kg/sec for the specified mode m

TIM_m = Time in mode in hours for specified mode m for a single engine

Source: Derivative of Equation F-1, from U.S. EPA, AP-42, Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition. September 1985.
Prepared by: Ricondo & Associates, Inc., April 2008

Table F-6

Particulate (PM₁₀) Emission Indices by Mode for the User-Created Bell 206 Helicopter

Mode	PM ₁₀ Emission Indices (g/Kg) per LTO Cycle ^{1/}
Approach	6.80
Climbout	2.42
Takeoff	2.99
Taxi ^{2/}	4.91

Notes:

1/ LTO = Landing and takeoff. One LTO cycle equals two operations: a landing and a takeoff.

2/ Taxi time includes taxi time and queue time.

Source: Ricondo & Associates, Inc., 2005, based on Equations F-1 and F-2, and information contained in U.S. EPA, AP-42, Compilation of Air Pollutant Emission Factors, Volume II: Mobile Sources, Fourth Edition. September 1985.
Prepared by: Ricondo & Associates, Inc., April 2008

F.1.1.2 Ground Support Equipment

Ground support equipment includes a wide range of vehicles used to service aircraft. Examples of GSE include tugs that haul baggage carts, fuel trucks, catering trucks, and auxiliary power units (APUs) and ground power units (GPUs) that provide electrical power to aircraft when the engines are not running. The EDMS database includes default GSE assignments for each aircraft type. These default assignments are expressed in terms of total operating times by specific type of GSE per LTO cycle. For the air quality analysis, default GSE assignments and operating times were assumed for the Bell 206 helicopter, as presented in **Table F-7**.

Table F-7

EDMS Default Ground Support Equipment for the Bell 206 Helicopter

Ground Support Equipment Type	Fuel	Horsepower	Load Factor ^{1/}	Minutes per LTO Cycle ^{2/}
Fuel Truck	Diesel	175	25%	10
Ground Power Unit	Diesel	71	75%	40

Note:

1/ Load factor is defined as the average fraction of rated power (horsepower) used during operation of equipment.

2/ LTO = Landing and takeoff. One LTO cycle equals two operations: a landing and a takeoff.

Source: The Emissions and Dispersion Modeling System, Version 4.3.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.1.3 On-Road Motor Vehicles

Motor vehicle traffic (on airport/heliport roadways and in parking lots) can be a significant source of pollutant emissions at an airport/heliport. This section summarizes the methodology used to model on-road motor vehicle emissions. For purposes of the air quality analysis, only vehicles operating on heliport access roads and in heliport parking lots were modeled in EDMS.

To estimate emissions from on-road motor vehicles, EDMS requires the definition of roadway segments and parking lots, the total annual motor vehicle volumes utilizing the roadway segments and parking lots, and speed-specific emission factors.

Heliport Access Roadways and Parking Lots

The locations and lengths/sizes of heliport access roadways and parking lots at McCarran International Airport were derived by Ricondo & Associates, Inc., based on information provided by the CCDOA. Locations of access roadways and parking lots at the Heliport site were derived from the conceptual heliport layout.³ These data were input into EDMS and speeds were assigned to each roadway segment and parking lot. An average speed of 25 miles per hour (mph) was assumed for all heliport access roads. Vehicles operating within heliport parking lots were assigned an average speed of 2.5 mph.

Annual motor vehicle volumes made by both passengers and employees were calculated for the existing condition, Proposed Action, and No Action alternative, as follows:

- **Passenger trips** – Passenger trips were calculated using a ratio of annual vehicle trips to annual helicopter air tour LTO cycles. According to operator interviews and surveys, helicopter air tour operators currently operating at McCarran International Airport use a

³ HNTB Corporation. *Conceptual Heliport Layout Drawing*. July 2007.

combination of vans and limousines to transport passengers from the customer base (the Las Vegas Strip) to their respective heliport facilities. Based on these interviews and surveys, an average fleet mix was derived and a ratio of 1.25 vehicle trips per LTO cycle was assumed. This ratio was used to calculate annual vehicle trips to/from McCarran International Airport

- Based on conversations with helicopter air tour operators, it was assumed that all operators would utilize passenger vans if operating to/from the Heliport site, resulting in a ratio of one vehicle trip per LTO cycle. This ratio was used to calculate annual passenger vehicle trips to/from the Heliport site. In addition, it was assumed that not all passengers would utilize the shuttle service provided by the operators. It was assumed that some passengers would drive their own vehicle to/from the heliport site. Twenty-five vehicle trips in personal vehicles were assumed per day.
- Employee trips** – It was assumed that shuttle drivers make one roundtrip to/from the heliport site each day using their personal vehicle and that each driver transports the equivalent of four helicopters worth of passengers per day. Therefore, one shuttle employee trip is assumed for every four helicopter departures. It was assumed that one pilot makes two flights (departures) per day and therefore, one pilot vehicle roundtrip was assumed for every four helicopter operations. Additionally, it was assumed that 50 other employees (i.e., not shuttle drivers or pilots) would travel to/from the heliport site each day using their personal vehicles. These employees would include maintenance, operations, and administrative personnel employed by the operators.

Using these methodologies, annual motor vehicle volumes were calculated for the existing condition (2004) and future years (2011 and 2017). **Table F-8** presents annual motor vehicle volumes for existing conditions, the Proposed Action, and the No Action alternative.

Table F-8

Heliport Access Roadway Motor Vehicle Volumes

	Annual Motor Vehicle Volumes ^{1/}		
	2004	2011	2017
Existing Conditions			
McCarran International Airport ^{2/}	116,759	-	-
Proposed Action			
Heliport Site	-	79,000	92,650
McCarran International Airport ^{2/}	-	63,975	70,375
Total	-	142,975	163,025
No Action Alternative			
McCarran International Airport ^{2/}	-	103,375	120,175

Notes:

1/ Stated annual motor vehicle volumes represent total vehicle trips, rather than roundtrips. The EDMS Version 4.3 calculates vehicle trips on roadways as roundtrips. Therefore, the total annual vehicle trips on a roadway segment was divided by 2 for entry into the EDMS.

2/ The calculation of annual motor vehicle volumes for McCarran International Airport includes vehicle trips associated with both Las Vegas Strip tours and Grand Canyon tours.

Source: Ricondo & Associates, Inc., April 2008, based on helicopter air tour operator interviews and helicopter historical and forecast activity developed in association with the Clark County Department of Aviation.

Prepared by: Ricondo & Associates, Inc., December 2008

Heliport Enroute Roadways

As previously discussed, only vehicles operating on heliport access roads and in heliport parking lots were modeled in EDMS. Emissions associated with on-road motor vehicle trips to/from the Las Vegas Strip to/from McCarran International Airport and the Heliport site were calculated outside of EDMS and added to the emissions summary presented in Section F.1.1.5. Distances were measured between Caesars Palace, located at the intersection of South Las Vegas Boulevard and Flamingo Road (a point on the Strip representative of where most helicopter air tour vehicular passenger and employee traffic would originate), and the access roads serving existing helicopter operator locations at McCarran and the proposed operator locations at the Heliport site. An average speed of 35 miles per hour was assumed for these "enroute" trips between the Las Vegas Strip and the Heliport site since it is anticipated that the vehicles would make several stops along the route. Vehicle volumes presented in Table F-8 were multiplied by the corresponding distances between each heliport site and the Strip to derive total vehicle miles traveled (VMT). VMT for existing conditions, Proposed Action, and No Action alternative are presented in **Table F-9**. Total VMT was multiplied by an appropriate emission factor to estimate enroute motor vehicle emissions.

Table F-9

Heliport Enroute Roadway Vehicle Miles Traveled

	Annual Vehicle Miles Traveled ^{1/}		
	2004	2011	2017
Existing Conditions			
McCarran International Airport ^{2/}	229,548	-	-
Proposed Action			
Heliport Site	-	1,303,500	1,528,725
McCarran International Airport ^{2/}	-	125,775	138,357
Total	-	1,429,275	1,667,082
No Action Alternative			
McCarran International Airport ^{2/}	-	203,025	236,264

Notes:

- 1/ Annual vehicle miles traveled are calculated by multiplying total annual vehicle trips by the corresponding on-way distance between each heliport site and a designated location on the Las Vegas Strip.
- 2/ The calculation of annual motor vehicle volumes for McCarran International Airport includes vehicle trips associated with both Las Vegas Strip tours and Grand Canyon helicopter tours.

Sources: Ricondo & Associates, Inc., April 2008, based on helicopter air tour operator interviews and helicopter historical and forecast activity developed in association with the Clark County Department of Aviation, and distance information measured using Geographic Information System software.

Prepared by: Ricondo & Associates, Inc., December 2008

On-Road Vehicle Emission Factors

The Clark County DAQEM provided emission factors for use in the air quality analysis, which were developed using the U.S. EPA's MOBILE6.2 model. Factors developed by the Clark County DAQEM are specific to Clark County and take into account local characteristics such as fuel mixture and vehicle fleet mix. However, due to the methodology by which the EDMS calculates emissions generated by vehicles in parking lots, default EDMS emission factors were used for on-road motor vehicle operations in heliport parking lots.

Table F-9 presents emission factors, expressed in grams per vehicle mile, for on-road motor vehicles operating on heliport access roadways and on roadways between the Strip and each heliport site. Emission factors for PM₁₀ include fugitive dust. Fugitive dust from vehicles operating on roadway segments was calculated separately and added to total PM₁₀ emissions in the emissions summaries presented in Section F.1.1.5.

Table F-9

On-Road Motor Vehicle Emission Factors

Year/Speed (miles per hour)	Emission Factors (grams per vehicle-mile)					
	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀) ^{1/}	Fine particulate matter (PM _{2.5})
2004						
2.5	34.607	15.146	2.606	0.0325	2.6666	0.0219
25	11.267	1.499	1.289	0.0326	2.6664	0.0217
35	11.504	1.302	1.202	0.0327	2.6660	0.0213
2011						
2.5	18.087	7.667	1.167	0.0082	2.3487	0.0146
25	5.634	0.805	0.576	0.0082	2.3487	0.0146
35	5.603	0.702	0.537	0.0083	2.3487	0.0145
2017						
2.5	13.869	4.645	0.625	0.0082	2.3466	0.0127
25	4.227	0.502	0.300	0.0082	2.3466	0.0127
35	4.144	0.433	0.278	0.0083	2.3466	0.0126

Note:

1/ Includes entrained road dust.

Source: Clark County Department of Air Quality and Environmental Management.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.1.4 Point Sources

It is anticipated that a fuel storage facility would be located at the Heliport site. Fuel tanks are sources of VOC emissions. Annual consumption of jet fuel at McCarran International Airport and the Heliport site was calculated based on information contained in the project definition manual.⁴

Table F-10 shows the annual helicopter air tour-related jet fuel consumption (in kiloliters) for the fuel storage facilities at McCarran and the proposed Heliport site.

⁴ HNTB Corporation. *Final: Project Definition, Development, and Operational Manual, Southern Nevada Regional Heliport*. December 5, 2006.

Table F-10**Existing and Forecast Jet Fuel Consumption**

	Annual Fuel Consumption (kiloliters)		
	2004	2011	2017
Existing Conditions			
McCarran International Airport ^{1/}	38,958	-	-
Proposed Action			
Heliport Site	-	22,964	30,710
McCarran International Airport ^{1/}	-	13,177	15,482
Total	-	36,141	46,192
No Action Alternative			
McCarran International Airport ^{1/}	-	27,364	33,413

Note:

1/ The calculation of fuel consumption for McCarran International Airport includes activity associated with both Las Vegas Strip tours and Grand Canyon helicopter tours.

Source: Ricondo & Associates, Inc., 2007, based on HNTB Corporation, *Final: Project Definition, Development, and Operational Manual, Southern Nevada Regional Heliport*. December 5, 2006.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.1.5 Summary of Heliport Operational Emissions

Table F-11 presents the estimated annual emissions of CO, VOC, NO_x, SO_x, PM₁₀, and PM_{2.5} generated by helicopter activity at McCarran International Airport under 2004 existing conditions. **Tables F-12** through **F-14** summarize the estimated annual heliport operational emissions of CO, VOC, NO_x, SO_x, PM₁₀, and PM_{2.5} under the Proposed Action and No Action alternative, in 2011 and 2017.

Table F-11**McCarran International Airport Helicopter Emissions Summary – 2004 Existing Conditions**

Source	Pollutant Emissions (tons/year)					
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Fine particulate matter (PM _{2.5}) ^{1/}
Aircraft	31.072	4.880	4.399	0.531	3.839	3.839
GSE	2.240	0.829	11.333	1.712	0.623	0.604
On-Road Vehicles ^{2/}	3.202	0.366	0.337	0.008	0.743	0.005
Parking Lots	1.785	0.376	0.104	0.000	0.000	0.000
Stationary Sources	0.000	0.007	0.000	0.000	0.000	0.000
Total	38.299	6.458	16.173	2.251	5.205	4.448

Notes:

Calculated emissions include emissions associated with both Grand Canyon and Strip helicopter air tour activity. Columns may not add to totals shown because of rounding.

GSE = Ground support equipment

1/ PM_{2.5} emissions for aircraft are assumed to be equal to PM₁₀ emissions.

2/ PM₁₀ emissions for on-road vehicles include entrained road dust.

Sources: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from the Clark County Department of Aviation and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., December 2008

Table F-12

2011 Operational Emissions Summary – Proposed Action

Site/Source	Pollutant Emissions (tons/year)					
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Fine particulate matter (PM _{2.5}) ^{1/}
Heliport Site						
Aircraft	20.510	3.221	2.903	0.351	2.534	2.534
GSE	1.197	0.360	4.383	1.102	0.477	0.463
On-Road Vehicles ^{2/}	8.343	1.055	0.809	0.012	3.512	0.021
Parking Lots	0.536	0.088	0.035	0.000	0.000	0.000
Stationary Sources	0.000	0.013	0.000	0.000	0.000	0.000
Total	30.586	4.737	8.130	1.465	6.523	3.018
McCarran International Airport ^{3/}						
Aircraft	12.723	1.998	1.801	0.217	1.572	1.572
GSE	0.742	0.224	2.718	0.683	0.297	0.288
On-Road Vehicles ^{2/}	0.855	0.106	0.080	0.001	0.363	0.002
Parking Lots	0.433	0.071	0.030	0.000	0.000	0.000
Stationary Sources	0.000	0.008	0.000	0.000	0.000	0.000
Total	14.753	2.407	4.629	0.901	2.232	1.862
Total Proposed Action (2011)	45.339	7.144	12.759	2.366	8.754	4.880

Notes:

Columns may not add to totals shown because of rounding.

GSE = Ground support equipment

1/ PM_{2.5} emissions for aircraft are assumed to be equal to PM₁₀ emissions.

2/ PM₁₀ emissions for on-road vehicles include entrained road dust.

3/ Includes emissions associated with both Las Vegas Strip tours and Grand Canyon helicopter tours.

Source: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from the Clark County Department of Aviation and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., December 2008

Table F-13

2017 Operational Emissions Summary – Proposed Action

Site/Source	Pollutant Emissions (tons/year)					
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Fine particulate matter (PM _{2.5}) ^{1/}
Heliport Site						
Aircraft	25.932	4.073	3.672	0.444	3.204	3.204
GSE	1.424	0.338	4.206	1.365	0.741	0.719
On-Road Vehicles ^{2/}	7.240	0.766	0.478	0.014	4.112	0.021
Parking Lots	0.505	0.071	0.024	0.000	0.000	0.000
Stationary Sources	0.000	0.018	0.000	0.000	0.000	0.000
Total	35.101	5.266	8.380	1.823	8.057	3.944
McCarran International Airport ^{3/}						
Aircraft	14.947	2.348	2.116	0.256	1.846	1.846
GSE	0.821	0.195	2.425	0.787	0.427	0.414
On-Road Vehicles ^{2/}	0.699	0.072	0.045	0.001	0.399	0.002
Parking Lots	0.384	0.054	0.019	0.000	0.000	0.000
Stationary Sources	0.000	0.009	0.000	0.000	0.000	0.000
Total	16.851	2.678	4.605	1.044	2.672	2.262
Total Proposed Action (2017)	51.952	7.944	12.986	2.867	10.729	6.206

Notes:

Columns may not add to totals shown because of rounding.

GSE = Ground support equipment

1/ PM_{2.5} emissions for aircraft are assumed to be equal to PM₁₀ emissions.2/ PM₁₀ emissions for on-road vehicles include entrained road dust.

3/ Includes emissions associated with both Las Vegas Strip tours and Grand Canyon helicopter tours.

Sources: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from the Clark County Department of Aviation and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., December 2008

Table F-14

2011 and 2017 Operational Emissions Summary (McCarran International Airport) – No Action Alternative

Year/Source	Pollutant Emissions (tons/year)					
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Fine particulate matter (PM _{2.5}) ^{1/}
2011						
Aircraft	26.419	4.149	3.741	0.452	3.264	3.264
GSE	1.541	0.464	5.646	1.420	0.615	0.596
On-Road Vehicles ^{2/}	1.385	0.172	0.131	0.002	0.587	0.003
Parking Lots	0.700	0.117	0.046	0.000	0.000	0.000
Stationary Sources	0.000	0.015	0.000	0.000	0.000	0.000
Total	30.045	4.917	9.564	1.874	4.466	3.863
2017						
Aircraft	32.259	5.067	4.568	0.552	3.986	3.986
GSE	1.771	0.421	5.233	1.699	0.922	0.894
On-Road Vehicles ^{2/}	1.194	0.124	0.078	0.002	0.681	0.003
Parking Lots	0.654	0.093	0.032	0.000	0.000	0.000
Stationary Sources	0.000	0.019	0.000	0.000	0.000	0.000
Total	35.878	5.724	9.911	2.253	5.589	4.883

Notes:

Calculated emissions include emissions associated with both Grand Canyon and Strip helicopter air tour activity. Columns may not add to totals shown because of rounding.

GSE = Ground support equipment

1/ PM_{2.5} emissions for aircraft are assumed to be equal to PM₁₀ emissions.

2/ PM₁₀ emissions for on-road vehicles include entrained road dust.

Sources: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from the Clark County Department of Aviation and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., December 2008

F.1.2 Construction Emissions

Pollutant emissions resulting from construction of the regional heliport at the Heliport site (the Proposed Action) were estimated from both on-road and nonroad sources, as well as from land development, wind erosion, and asphalt paving activities. Construction emissions were not estimated for the No Action alternative. Under the No Action alternative, it is assumed that helicopter air tour operators would utilize existing facilities at McCarran International Airport. If, under the No Action alternative, helicopter air tour operators were to relocate from McCarran, the construction of any related facilities may require separate environmental analyses beyond the scope of this environmental assessment.

F.1.2.1 Construction Schedule

Construction emissions were calculated for the period planned for construction of the regional heliport at the Heliport site. The construction schedule used in the air quality analysis was derived from information obtained from The Louis Berger Group and the CCDOA. The construction schedule is presented on **Exhibit E-1**.

Exhibit F-1
Construction Schedule

Task ID	Task Name	Work Days	No. Months	Quarter 3			Quarter 4			Quarter 1			Quarter 2			Quarter 3			Quarter 4			Quarter 1			Quarter 2			Quarter 3			Quarter 4		
				Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Task 1	Project Coordination, Schedule, and Preparations	654.0	30																														
Task 2	Final Design	207.0	0.5																														
Task 2.1	Engineering Plans and Specification	207.0	9.5																														
Task 2.2	Bid Phase	207.0	9.5																														
Task 3	Geotechnical	11.0	0.5																														
Task 4	Survey	273.0	12.5																														
Task 5	Utility Extensions to Site (off-site)	654.0	30																														
Task 6	Utilities, Water (on-site)	152.0	7																														
Task 6.1	Water Line	131.0	6																														
Task 6.2	Storage Tanks	43.0	2																														
Task 6.3	Fire Pump	43.0	2																														
Task 6.4	Pump Station	131.0	6																														
Task 6.5	Back up Generator	21.0	1																														
Task 7	Utilities, Sanitary Sewer (on-site)	152.0	7																														
Task 7.1	Sewer Line	152.0	7																														
Task 7.2	Septic Tank	65.0	3																														
Task 8	Utilities, Telephone (on-site)	152.0	7																														
Task 8.1	Telephone service	152.0	7																														
Task 9	Utilities, Gas (on-site)	152.0	7																														
Task 9.1	Gas service	152.0	7																														
Task 10	Grading	129.0	6																														
Task 10.2	Apron	85.0	4																														
Task 10.3	Taxiways	85.0	4																														
Task 10.4	TLOF/FATO Areas	129.0	6																														
Task 10.5	Buildings	22.0	1																														
Task 10.6	Access Roads	85.0	4																														
Task 10.7	Fuel Tank	20.0	1																														
Task 10.8	Parking	85.0	4																														
Task 10.9	Drainage Facilities	87.0	4																														
Task 11	Drainage	87.0	4																														
Task 11.1	Drainage Facilities	87.0	4																														
Task 12	Paving or Treated	65.0	3																														
Task 12.1	Apron	45.0	2																														
Task 12.2	Taxiways	45.0	2.0																														
Task 12.3	TLOF/FATO Areas	65.0	3																														
Task 12.4	Access Roads	23.0	1																														
Task 12.5	Fuel Tank	11.0	0.5																														
Task 12.6	Parking	34.0	1.5																														
Task 13	Building	187.0	8.5																														
Task 13.1	Terminal and Maintenance	187.0	8.5																														

Source: Ricondo & Associates, Inc., 2007, based on information obtained from The Louis Berger Group and the Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008

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F.1.2.2 On-Road Construction Equipment

On-road source emissions were calculated using the methodologies outlined in the U.S. EPA's AP-42, *Compilation of Air Pollutant Emission Factors* Fourth Edition, Volume II: *Mobile Sources*. On-road construction emissions include emissions from off-site vehicle trips (i.e., employee vehicle trips to and from the job site, off-site hauling trips, and material delivery trips) and on-site vehicle trips (i.e., water trucks). Vehicle trips were derived based on information provided by The Louis Berger Group, the CCDOA, and from the conceptual heliport layout drawing.⁵

On-Road/Off-Site Construction Equipment

The first step in calculating total on-road/off-site construction emissions was to determine total VMT by each type of vehicle trip during each construction year. VMT is calculated by multiplying the total number of roundtrips made by the vehicle by the distance per roundtrip. VMT is then multiplied by an appropriate emission factor to calculate total emissions. The Clark County DAQEM provided emission factors for use in the air quality analysis, which were developed using the U.S. EPA's MOBILE6.2 model. Factors developed by the Clark County DAQEM are specific to Clark County and take into account local characteristics such as fuel mixture and vehicle fleet mix. An average speed of 45 miles per hour was assumed for all on-road/off-site construction equipment trips. **Table F-15** presents the MOBILE6.2 emission factors used to calculate emissions for on-road construction equipment.

Table F-15

On-Road/Off-Site Motor Vehicle Emission Factors

Construction Year	Emission Factors (grams per vehicle-mile) ^{1/}						
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Entrained Road Dust (PM ₁₀)	Fine particulate matter (PM _{2.5})
2008	7.794	0.836	0.785	0.0083	0.0311	2.320	0.0167
2009	7.202	0.769	0.704	0.0083	0.0301	2.320	0.0159
2010	6.643	0.701	0.625	0.0083	0.0292	2.320	0.0150

Note:

1/ Assuming an average speed of 45 miles per hour for on-road/off-site vehicle trips.

Source: Clark County Department of Air Quality and Environmental Management.

Prepared by: Ricondo & Associates, Inc., April 2008

Emissions were calculated for a variety of on-road/off-site vehicle trips/activities, as follows:

- It was assumed that employees would make one roundtrip per work day to/from the job site and that the total roundtrip distance traveled by each employee each day would be 40 miles.
- Grading operations at the Heliport site will require fill material to be hauled to the site to balance cut and fill requirements. In addition, excavation for the extension of underground utilities to the site would require excess fill material to be hauled away. It was assumed that net grading material resulting from utility excavation would not be used for fill material at the Heliport site. It was assumed that dump trucks with a capacity of 13 cubic yards (CY) would perform all fill material delivery/hauling trips. The roundtrip distance to/from the site to/from the material pickup/drop off site was assumed to be 40 miles.

⁵ HNTB Corporation. *Conceptual Heliport Layout Drawing*. July 2007.

- Construction of the regional heliport facilities at the Heliport site would require truck trips for the delivery of construction materials. Total vehicle trips required for these deliveries were estimated by The Louis Berger Group and were assumed to be from local suppliers within 20 miles of the job site (roundtrip distance of 40 miles). Additional construction material deliveries would be required for the extensions of utilities to the site (i.e., deliveries of poles, cabling, and pipes). Total vehicle trips were estimated based on data provided by the CCDOA, with deliveries assumed to be from local suppliers within 20 miles of the job site (40 miles roundtrip).
- Since it is not anticipated that water utilities will be available at the Heliport site until the end of the construction period, water will need to be trucked on site to serve employees and various construction needs (i.e., dust control), as well as to provide adequate fire suppression capabilities during construction. The delivery of water to the site was assumed to be from local suppliers within 20 miles of the job site (40 miles roundtrip). It was assumed that 4,000-gallon tanker trucks would deliver water to the site.
- Asphalt will be required for the paving of taxiways, aprons, roadways, and parking lots at the proposed heliport site. Based on estimates provided by The Louis Berger Group, it was assumed that 2,700 truck trips would be required for the delivery of asphalt mix, obtained from a plant located in the Southwest Las Vegas Valley near Blue Diamond Road and Jones Boulevard (26 miles roundtrip to/from the job site).
- Concrete is assumed to be required for several surface applications at the proposed heliport site, including helicopter pads, takeoff and landing areas, and building foundations. It was assumed that concrete would be delivered using transit mixers with a capacity of 10 CY from a supplier such as Nevada Ready Mix, located on Las Vegas Boulevard, approximately 10 miles from the Heliport site (roundtrip distance of 20 miles).

Total on-road construction emissions were calculated by multiplying the VMT for each activity by an emission factor (expressed in grams per vehicle mile) obtained from MOBILE6.2. A conversion factor was then applied to obtain total emissions for each pollutant in tons per year.

An additional source of PM₁₀ emissions associated with on-road construction activity is entrained road dust. Entrained road dust was calculated by using an emission factor developed by the Clark County DAQEM for each construction year. This factor was multiplied by the VMT for each activity, resulting in a value of entrained road dust (PM₁₀) emissions in tons per year.

On-Road/On-Site Construction Equipment

In addition to the on-road vehicle trips previously discussed, on-site water trucks and bucket trucks were modeled using on-road emission factors. Water trucks would be required for dust control, while bucket trucks would be needed for above-ground utility work. Construction schedules developed in association with The Louis Berger Group and the CCDOA were used to derive monthly/annual hours for these vehicles.

To estimate emissions from on-road/on-site water trucks and bucket trucks, MOBILE6.2 emission factors were converted from grams per vehicle mile to pounds per hour and then multiplied by an estimate of total vehicle hours. An average speed of 5 miles per hour was assumed for all on-road/on-site construction equipment. Emission factors for on-road on-site construction vehicles, by construction year, are presented in **Table F-16**.

Table F-16**On-Road/On-Site Motor Vehicle Emission Factors**

Construction Year	Emission Factors (pounds per hour) ^{1/}						
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Entrained Road Dust (PM ₁₀)	Fine particulate matter (PM _{2.5})
2008	0.150	0.042	0.016	0.0001	0.0003	0.026	0.0002
2009	0.139	0.038	0.014	0.0001	0.0003	0.026	0.0002
2010	0.130	0.034	0.012	0.0001	0.0003	0.026	0.0002

Note:

^{1/} Assuming an average speed of 5 miles per hour for on-road/on-site vehicle trips.

Source: Clark County Department of Air Quality and Environmental Management.

Prepared by: Ricondo & Associates, Inc., April 2008

Emissions estimates for on-road construction equipment for the Proposed Action are presented in **Table F-17**.

F.1.2.3 Nonroad Construction Equipment

Nonroad construction equipment includes bulldozers, loaders, sweepers, and other heavy-duty construction equipment that does not travel on roadways. Emission factors for nonroad vehicles equipped with gasoline-powered engines were derived from AP-42 Volume 1: *Stationary Point and Area Sources*. Emissions from diesel-powered engines are regulated under 40 CFR Part 89.112,⁶ *Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards*. Emission factors associated with diesel engines vary by engine year and horsepower according to Tier 1, Tier 2, Tier 3, and Tier 4 emissions standards as presented in Table 1 of the U.S. EPA report NR-009c, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition*. These factors were used with data and methodologies described in the U.S. EPA *Nonroad Engine and Vehicle Emission Study-Report* to estimate diesel equipment emissions for each construction year.

Nonroad construction equipment emissions were calculated based on the type of fuel (gasoline or diesel), engine horsepower, equipment use in hours, load factor, and the average age of the equipment. The U.S. EPA recommends the technique shown in **Equation F-3** for calculating emissions from nonroad engine sources.

⁶ U.S. Environmental Protection Agency. *Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines, Oxides of nitrogen, carbon monoxide, hydrocarbon, and particulate matter exhaust emission standards*. 40 C.F.R. Part 89.112.

Table F-17

On-Road Construction Equipment Emissions – Proposed Action

Year/Source	Round-trips per Year	VTM	Hours per Year	CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	Entrained Road Dust
2008										
Employee vehicles	2,640	105,600	n.a.	0.907	0.097	0.091	0.001	0.002	0.004	0.270
Grading material hauling/delivery	1,081	43,242	n.a.	0.372	0.040	0.037	0.000	0.001	0.001	0.111
Material deliveries	18	725	n.a.	0.006	0.001	0.001	0.000	0.000	0.000	0.002
Water trucks	n.a.	n.a.	1,122	0.084	0.024	0.009	0.000	0.000	0.000	n.a. ^{1/}
Bucket trucks	n.a.	n.a.	1,122	0.084	0.024	0.009	0.000	0.000	0.000	n.a. ^{1/}
Total				1.453	0.185	0.147	0.001	0.003	0.005	0.382
2009										
Employee vehicles	10,187	407,480	n.a.	3.235	0.345	0.316	0.004	0.007	0.014	1.042
Grading material hauling/delivery	28,653	1,146,124	n.a.	9.099	0.972	0.889	0.010	0.020	0.038	2.931
Material deliveries	357	14,289	n.a.	0.113	0.012	0.011	0.000	0.000	0.000	0.037
Water deliveries	1,900	76,008	n.a.	0.603	0.064	0.059	0.001	0.001	0.003	0.194
Water trucks	n.a.	n.a.	3,706	0.258	0.070	0.026	0.000	0.001	0.000	n.a. ^{1/}
Bucket trucks	n.a.	n.a.	2,219	0.154	0.042	0.015	0.000	0.000	0.000	n.a. ^{1/}
Total				13.463	1.506	1.317	0.015	0.030	0.055	4.204
2010										
Employee vehicles	10,329	413,140	n.a.	3.025	0.319	0.285	0.004	0.007	0.013	1.057
Grading material hauling/delivery	14,491	579,655	n.a.	4.245	0.448	0.399	0.005	0.010	0.019	1.482
Material deliveries	470	18,818	n.a.	0.138	0.015	0.013	0.000	0.000	0.001	0.048
Asphalt deliveries	2,700	70,200	n.a.	0.514	0.054	0.048	0.001	0.001	0.002	0.180
Concrete deliveries	18,146	362,914	n.a.	2.657	0.280	0.250	0.003	0.006	0.012	0.928
Water trucks	n.a.	n.a.	4,437	0.288	0.076	0.028	0.000	0.001	0.000	n.a. ^{1/}
Bucket trucks	n.a.	n.a.	2,219	0.144	0.038	0.014	0.000	0.000	0.000	n.a. ^{1/}
Total				11.011	1.231	1.037	0.014	0.025	0.047	3.695

Notes:

Columns may not add to totals shown because of rounding.

n.a. = not applicable

VTM = vehicle miles traveled

CO = carbon monoxide; VOC = volatile organic compounds; NO_x = oxides of nitrogen; SO_x = oxides of sulfur; PM₁₀ = particulate matter; PM_{2.5} = fine particulate matter.^{1/} Entrained road dust emissions for on-site water trucks and bucket trucks are included in land development fugitive dust emissions (See Section F.1.2.4).

Source: Ricondo & Associates, Inc., 2007, based on information obtained from the Clark County Department of Aviation, HNTB Corporation, The Louis Berger Group, and the Clark County Department of Air Quality and Environmental Management.

Prepared by: Ricondo & Associates, Inc., April 2008

Equation F-3**Nonroad Construction Equipment Emissions Calculation Equation**

$$M_i = (N)(HRS)(HP)(LF/100)(EF_i)$$

where:

M_i = mass of emissions of i^{th} pollutants during the inventory period;

N = source population (units);

HRS = annual hours of use;

HP = average rated horsepower;

LF = typical load factor;

EF_i = average emissions of i^{th} pollutant per unit of use (e.g., pounds per horsepower-hour).

Source: U.S. Environmental Protection Agency. *Nonroad Engine and Vehicle Emission Study—Report*. November 1991.

Emission factors associated with diesel engines vary by the year the engine was manufactured and by horsepower. The fleet age of the diesel equipment that would be used for the construction of a regional heliport was estimated to be an eight year spread – for the 2007 construction year, it was assumed that the oldest piece of equipment on-site was manufactured in 2000, whereas, for the 2008 construction year, it was assumed that the oldest piece of equipment on-site was manufactured in 2001. Through the use of the vehicle age spread, a weighted average of Tier 1, Tier 2, Tier 3, and Tier 4 emission standards was developed for each equipment type and horsepower range. This methodology is the most representative process for calculating pollutant emissions for nonroad construction equipment equipped with diesel engines.

The data used to estimate emissions from nonroad construction equipment for each construction year (2008, 2009, and 2010), as well as total emissions by equipment type and construction year, are presented in **Table F-18**.

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Table F-18 (1 of 2)

Nonroad Construction Equipment Emissions – Proposed Action

Year and Equipment Type	Fuel Type	Load Factor ^{3/}	Brake Horsepower	Total Hours	Emission Factors (pounds per horsepower-hour) ^{1/}					Conversion Factor ^{4/}	Pollutant Emissions (tons per year) ^{2/}					
					CO	VOC	NO _x	SO _x	PM ₁₀		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5} ^{5/}
2008																
Crane	Diesel	43%	200	1,122	0.0016	0.0006	0.0084	0.0003	0.0004	0.0005	0.080	0.028	0.408	0.013	0.018	0.018
Dump truck	Diesel	38%	260	1,122	0.0016	0.0006	0.0084	0.0003	0.0004	0.0005	0.091	0.032	0.468	0.014	0.021	0.021
Hydraulic excavator	Diesel	59%	222	1,122	0.0016	0.0006	0.0084	0.0003	0.0004	0.0005	0.121	0.042	0.621	0.019	0.027	0.027
Soil compactor	Diesel	55%	150	1,122	0.0019	0.0007	0.0090	0.0003	0.0005	0.0005	0.088	0.031	0.417	0.012	0.022	0.022
Wheel loader	Diesel	38%	220	1,122	0.0016	0.0006	0.0084	0.0003	0.0004	0.0005	0.077	0.027	0.396	0.012	0.017	0.017
Total ^{5/}											0.458	0.160	2.310	0.070	0.105	0.105
2009																
Backhoe loader	Diesel	38%	124	1,488	0.0019	0.0006	0.0081	0.0003	0.0005	0.0005	0.067	0.022	0.285	0.009	0.016	0.016
Crane	Diesel	43%	200	3,706	0.0016	0.0005	0.0076	0.0003	0.0003	0.0005	0.263	0.086	1.211	0.041	0.055	0.055
Dump truck	Diesel	38%	260	3,706	0.0016	0.0005	0.0076	0.0003	0.0003	0.0005	0.302	0.099	1.392	0.048	0.063	0.063
Generator	Diesel	74%	749	1,488	0.0029	0.0004	0.0073	0.0003	0.0003	0.0005	1.206	0.152	3.000	0.107	0.128	0.128
Hydraulic excavator	Diesel	59%	222	3,511	0.0016	0.0005	0.0076	0.0003	0.0003	0.0005	0.379	0.125	1.747	0.060	0.079	0.079
Motor grader	Diesel	54%	215	748	0.0016	0.0005	0.0076	0.0003	0.0003	0.0005	0.072	0.024	0.330	0.011	0.015	0.015
Soil compactor	Diesel	55%	150	3,706	0.0019	0.0006	0.0081	0.0003	0.0005	0.0005	0.292	0.095	1.245	0.040	0.070	0.070
Wheel loader	Diesel	38%	220	3,706	0.0016	0.0005	0.0076	0.0003	0.0003	0.0005	0.255	0.084	1.177	0.040	0.053	0.053
Wheel tractor - scraper	Diesel	60%	450	748	0.0019	0.0004	0.0075	0.0003	0.0003	0.0005	0.188	0.037	0.761	0.026	0.031	0.031
Total ^{6/}											3.023	0.723	11.149	0.383	0.510	0.510

Notes:

CO = carbon monoxide; VOC = volatile organic compounds; NO_x = oxides of nitrogen; SO_x = oxides of sulfur; PM₁₀ = particulate matter; PM_{2.5} = fine particulate matter.

1/ Emission factors were derived from Tier 1 and Tier 2 standards and an eight-year spread for construction equipment was used to create a weighted average emission factor.

2/ Vehicle emissions are calculated by multiplying the annual hours, load factor, horsepower, emission factor, usage factor, and conversion factor to create a value of tons per year for each piece of equipment.

3/ Load factor is defined as the average fraction of rated power (horsepower) used in a duty cycle. The load factor information was derived from Table 2-05 "Inventory A and B Typical Operating Load Factor Estimates" of the *Nonroad Engine and Vehicle Emission Study-Report*, November 1991. The load factors used for diesel vehicles were derived from Inventory B.

4/ The conversion factor is the number of pounds per ton – 1 ton/ 2,000 pounds = 0.0005.

5/ For nonroad construction equipment, PM_{2.5} emissions are assumed to be equal to PM₁₀ emissions.

6/ Columns may not add to totals shown because of rounding.

Sources: Ricondo & Associates, Inc., 2007, based on the document listed above and information provided by The Louis Berger Group, HNTB Corporation, and the Clark County Department of Aviation.

Prepared by: Ricondo & Associates, Inc., April 2008

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Table F-18 (2 of 2)
Nonroad Construction Equipment Emissions – Proposed Action

Year and Equipment Type	Fuel Type	Load Factor ^{3/}	Brake Horsepower	Total Hours	Emission Factors (pounds per horsepower-hour) ^{1/}					Conversion Factor ^{4/}	Pollutant Emissions (tons per year) ^{2/}					
					CO	VOC	NO _x	SO _x	PM ₁₀		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5} ^{5/}
2010																
Asphalt Paver	Diesel	56%	200	553	0.0016	0.0005	0.0068	0.0001	0.0003	0.0005	0.051	0.016	0.209	0.004	0.010	0.010
Backhoe Loader	Diesel	38%	124	1,658	0.0019	0.0006	0.0073	0.0001	0.0004	0.0005	0.075	0.022	0.284	0.005	0.017	0.017
Concrete Paver - Bidwell	Diesel	56%	460	553	0.0019	0.0004	0.0070	0.0001	0.0003	0.0005	0.132	0.026	0.500	0.009	0.022	0.022
Concrete Pump Truck	Diesel	62%	430	553	0.0019	0.0004	0.0070	0.0001	0.0003	0.0005	0.137	0.027	0.518	0.009	0.023	0.023
Concrete Saw	Diesel	78%	20	553	0.0048	0.0010	0.0098	0.0001	0.0006	0.0005	0.021	0.004	0.042	0.001	0.003	0.003
Crane	Diesel	43%	200	4,250	0.0016	0.0005	0.0068	0.0001	0.0003	0.0005	0.301	0.093	1.234	0.022	0.058	0.058
Dual Drum Vibrator	Diesel	55%	145	553	0.0019	0.0006	0.0073	0.0001	0.0004	0.0005	0.042	0.013	0.160	0.003	0.010	0.010
Dump Truck	Diesel	38%	260	3,876	0.0016	0.0005	0.0068	0.0001	0.0003	0.0005	0.316	0.097	1.293	0.023	0.060	0.060
Generator	Diesel	74%	749	2,219	0.0029	0.0004	0.0068	0.0001	0.0003	0.0005	1.799	0.226	4.203	0.075	0.194	0.194
Hydraulic Excavator	Diesel	59%	222	3,145	0.0016	0.0005	0.0068	0.0001	0.0003	0.0005	0.339	0.105	1.391	0.025	0.065	0.065
Motor Grader	Diesel	54%	215	349	0.0016	0.0005	0.0068	0.0001	0.0003	0.0005	0.033	0.010	0.137	0.002	0.006	0.006
Pneumatic Tire Compactor	Diesel	55%	99	553	0.0052	0.0007	0.0092	0.0001	0.0006	0.0005	0.078	0.011	0.138	0.002	0.008	0.008
Soil Compactor	Diesel	55%	150	3,689	0.0019	0.0006	0.0073	0.0001	0.0004	0.0005	0.291	0.088	1.107	0.019	0.067	0.067
Wheel Loader	Diesel	38%	220	3,876	0.0016	0.0005	0.0068	0.0001	0.0003	0.0005	0.267	0.082	1.094	0.020	0.051	0.051
Wheel Tractor - Scraper	Diesel	60%	450	349	0.0019	0.0004	0.0070	0.0001	0.0003	0.0005	0.087	0.017	0.331	0.006	0.015	0.015
Total ^{6/}											3.970	0.837	12.641	0.224	0.610	0.610

Notes:
CO = carbon monoxide; VOC = volatile organic compounds; NO_x = oxides of nitrogen; SO_x = oxides of sulfur; PM₁₀ = particulate matter; PM_{2.5} = fine particulate matter.
1/ Emission factors were derived from Tier 1 and Tier 2 standards and an eight-year spread for construction equipment was used to create a weighted average emission factor.
2/ Vehicle emissions are calculated by multiplying the annual hours, load factor, horsepower, emission factor, usage factor, and conversion factor to create a value of tons per year for each piece of equipment.
3/ Load factor is defined as the average fraction of rated power (horsepower) used in a duty cycle. The load factor information was derived from Table 2-05 "Inventory A and B Typical Operating Load Factor Estimates" of the *Nonroad Engine and Vehicle Emission Study-Report*, November 1991. The load factors used for diesel vehicles were derived from Inventory B.
4/ The conversion factor is the number of pounds per ton – 1 ton/ 2,000 pounds = 0.0005.
5/ For nonroad construction equipment, PM_{2.5} emissions are assumed to be equal to PM₁₀ emissions.
6/ Columns may not add to totals shown because of rounding.

Sources: Ricondo & Associates, Inc., 2007, based on the document listed above and information provided by The Louis Berger Group, HNTB Corporation, and the Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008

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F.1.2.4 Land Development

Fugitive dust from land development includes particulate emissions from activities such as grading, trenching, crushing, screening, and back filling. Particulate emissions from land development activities are calculated by multiplying the estimated number of acres disturbed per year by the total months per year the land is disturbed, an emission factor (measured in tons/acre/month), and a control efficiency.

Estimates of development areas at the Heliport site were derived from the conceptual heliport layout drawing developed by HNTB Corporation. Development areas include helicopter parking pads, fuel tanks, takeoff and landing areas, buildings, paved aprons, taxiways, access roadways, parking lots, and on-site utilities. The number of acres affected during each construction year was calculated based on the percentage of construction activity scheduled to take place each year. Land development emissions were also calculated for the areas of the utility extensions requiring earth moving activities. An emission factor of 0.42 tons/acre/month was obtained from the Clark County PM₁₀ State Implementation Plan (PM₁₀ SIP), prepared in June 2001. It is assumed that the disturbed areas would be watered, thus partially mitigating the amount of fugitive dust generated by construction activities. A control efficiency of 50 percent was assumed to account for adequate watering.

Table F-19 presents the data used to calculate PM₁₀ emissions from land development activities, as well as the total PM₁₀ emissions from land development activities for the Proposed Action, by construction year.

Table F-19

Particulate Emissions from Land Development – Proposed Action

Project Component	Total Area (acres)	Disturbed Area (acres)			Total Months Disturbed			Emission Factor ^{1/}	Mitigation ^{2/}	PM ₁₀ Emissions (tons/year)		
		2008	2009	2010	2008	2009	2010			2008	2009	2010
Site infrastructure ^{3/}	34.75	0.00	15.62	19.13	0	4	9	0.42	50%	0.00	13.12	36.16
On-Site utilities	23.07	0.00	23.07	0.00	0	7	0	0.42	50%	0.00	33.92	0.00
Utility extensions ^{4/}	24.32	20.87	1.72	1.72	6	12	12	0.42	50%	26.30	4.34	4.34
Total	82.14	20.87	40.42	20.85						26.30	51.38	40.50

Notes:

Columns may not add to total shown because of rounding.

PM₁₀ = particulate matter.

1/ The emission factor for land development activities is measured in tons/acre/month, and was obtained from the Clark County PM₁₀ State Implementation Plan (June 2001).

2/ Adequate watering is assumed to reduce particulate emissions by 50 percent.

3/ Site infrastructure includes helicopter parking pads, fuel tanks, takeoff and landing areas, buildings, apron areas, taxiways, access roadways, and parking lots.

4/ Land development area for the utility extensions is assumed to only apply to those areas subject to excavation/earth moving activities.

Sources: Ricondo & Associates, Inc., 2007, based on information provided by HNTB Corporation and the Clark County Department of Aviation.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.2.5 Wind Erosion

Dirt piles, areas of bare soils, and newly paved portions of a construction site can be sources of windblown PM₁₀. Emission factors for wind erosion were derived from Section 11.9 “Western Surface Coal Mining” of AP-42. Coal mining emission factors were used in the analysis where AP-42 dust factors were lacking, consistent with standard industry practices.

PM₁₀ emissions caused by wind erosion were calculated using the methodologies outlined in Section 13.2.3, “Heavy Construction Operations” of AP-42. Wind erosion emissions are calculated by determining the acreage affected by land development activities (see Section E.1.2.4) and multiplying the acreage amount by the appropriate emission factor and control efficiency factor. The methodology used to calculate wind erosion emissions is presented in **Equation F-4**.

Equation F-4

Wind Erosion Emissions Calculation Equation

$$M_i = (A)(YR)(1-CE)(EF_i)$$

where:

M_i = mass of emissions of i^{th} pollutants during inventory period;

A = area of land affected (acres);

YR = percentage of year that operations are occurring;

CE = control efficiency of mitigation measures taken (watering, covering, etc.);

EF_i = average emissions of i^{th} pollutant per unit of use (tons per acre per year).

Source: U.S. EPA. Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Section 13.2.3 “Heavy Construction Operations”. January 1995.
Prepared by: Ricondo & Associates, Inc., April 2008

PM₁₀ emissions associated with wind erosion were calculated: (1) for the period of time when the area of disturbance would have exposed soil and (2) for the period of time after the area of disturbance was paved and construction was still ongoing. Wind blown PM₁₀ emissions were estimated separately for prepaving/postpaving because of the different control efficiencies that are possible before and after an area has been paved. The control efficiencies used in this analysis were based on professional judgment and experience.

For purposes of the wind erosion analysis, it was assumed that adequate watering would occur before paving – approximately three to four applications of water per day – to reduce PM₁₀ emissions caused by wind erosion. It was also assumed that a maximum speed limit of 25 miles per hour would be instituted on the construction site to reduce wind erosion emissions. This is consistent with the assumption that on-site construction equipment would travel at an average speed of 5 miles per hour. According to the methodology outlined in Table 13.2.3-1 “Recommended Emission Factors for Construction Operations” in Section 13.2.3 of AP-42, the combination of these two control methods creates a total control efficiency of 63 percent. It was assumed that infrequent cleanup (approximately once per week) of the paved ground would occur at the construction site after paving, reducing dust emissions by 85 percent.

Table F-20 provides a summary of PM₁₀ emissions associated with wind erosion for the Proposed Action.

Table F-20

Particulate Emissions from Wind Erosion – Proposed Action

Year	Land Development Source	Total Area Affected (acres) ^{1/}	TSP Emission Factor (tons per acre per month) ^{2/,3/}	PM ₁₀ Fraction ^{4/}	Percentage of Year of Wind Erosion	Control Efficiency ^{5/}	Total PM ₁₀ Emissions (tons/year)
2008	Wind Erosion before Paving	20.87	0.38	50%	100.00%	63%	1.47
2008	Wind Erosion during Paving	0.00	0.38	50%	0.00%	63%	0.00
2008	Wind Erosion after Paving	0.00	0.38	50%	0.00%	63%	0.00
Total (2008)							1.47
2009	Wind Erosion before Paving	40.42	0.38	50%	55.20%	63%	1.57
2009	Wind Erosion during Paving	0.00	0.38	50%	0.00%	63%	0.00
2009	Wind Erosion after Paving	0.00	0.38	50%	0.00%	63%	0.00
Total (2009)							1.57
2010	Wind Erosion before Paving	20.85	0.38	50%	15.90%	85%	0.23
2010	Wind Erosion during Paving	57.83	0.38	50%	25.00%	85%	1.02
2010	Wind Erosion after Paving	57.83	0.38	50%	66.67%	85%	1.10
Total (2010)							2.35

Notes:

PM₁₀ = particulate matter

TSP = total suspended particulates

1/ Acres and schedule information were provided by The Louis Berger Group.

2/ The emission factor for earth moving is based on information in the *PM₁₀ State Implementation Plan* for the Las Vegas Valley.3/ Emission factors for wind erosion are found in the report *Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources*, Section 11.9 "Western Surface Coal Mining", Table 11.9-4 October 1998. Emission factors for wind erosion are expressed in tons/acre/year. The factor is appropriate assuming that pulverized coal and unconsolidated earth have the same potential for becoming airborne (i.e., the same degree of "dustiness").4/ TSP was converted to PM₁₀ using a fraction of 0.5, based on *Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I*, and professional judgment.

5/ The control efficiencies were calculated assuming that the area of disturbance would be watered three to four times a day and that the maximum allowable speed on the site would be 25 miles per hour. After the paving operations are completed, it was assumed that the paved area would be swept once a week.

Source: Ricondo & Associates, Inc., 2007, based on information provided by HNTB Corporation and the Clark County Department of Aviation, and the sources noted above.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.2.6 Asphalt Paving

Asphalt surfaces and pavements are composed of compacted aggregate and an asphalt binder. Aggregate materials are produced from rock quarries as manufactured stone or are obtained from

natural gravel or soil deposits. Asphalt binders take the form of asphalt cement (the residue of the distillation of crude oils), and liquefied asphalts. Asphalt cement, which is semi-solid, must be heated prior to mixing with aggregate.

Asphalt paving operations can be a source of VOC emissions. VOC emissions are created by the evaporation of the petroleum distillate solvent, or diluent, used to liquefy asphalt cement. Asphalt paving emissions associated with the construction of the Heliport were calculated using the methodologies presented in Section 4.5 "Asphalt Paving Operations" of AP-42, Fifth Edition, Volume I. The formula used to calculate VOC emissions caused by asphalt paving operations is presented in **Equation F-5**.

Equation F-5

Asphalt Paving Emissions Calculation Equation

$$M_i = (A)(AR)(VD)(EF)(D)$$

where:

M_i = mass of emissions of i^{th} pollutants during inventory period;

A = area of land affected (square meters);

AR = application rate of liquefied asphalt over area (liters per square meter);

VD = percent, by volume, of diluent in liquefied asphalt (percentage);

EF = percent of diluent (mass) that evaporates and becomes VOC
(percentage);

D = density of solvent used (pounds per liter).

Source: U.S. EPA. *Compilation of Air Pollutant Emission Factors* AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 4.5 "Asphalt Paving Operations". January 1995.

Prepared by: Ricondo & Associates, Inc., April 2008

The following assumptions were used to estimate VOC emissions associated with asphalt paving operations.

- The paving area for applicable components of the Heliport site was derived from the conceptual heliport layout drawing developed by HNTB Corporation.
- Asphalt would be batched offsite and trucked to the construction site.
- The asphalt would be put down in one lift (layer) for each applicable activity, unless otherwise stated. The asphalt paving process, therefore, includes a prime coat and one tack coat (one tack coat for each lift).
- Asphalt paving operations were assumed to include liquefied asphalts as the asphalt binder. Liquefied asphalts include cutback asphalts, assumed to be used for prime coat paving operations, and emulsified asphalts, assumed to be used for tack coat paving operations. The cutback asphalt was assumed to contain kerosene as the diluent, a common construction industry practice.
- The application rate for the prime coat would be 1.3583 liters of cutback asphalt per square meter of paving.
- The application rate for the tack coat would be 0.4528 liter of emulsified asphalts per square meter of paving.

- The cutback asphalt used would be medium cure. The percent by volume of diluent in the cutback asphalt would be 35 percent.
- All asphalt paving is assumed to occur in 2010 at the Heliport site.

The emission calculations were performed separately for the tack coat and the prime coat because each would have a different application rate and percent by volume of diluent. **Table F-21** presents a summary of VOC emissions associated with asphalt paving activities.

Table F-21**Asphalt Paving Emissions – Proposed Action**

Year	Paved Area (m ²) ^{1/}	Solvent Density (lb/L) ^{2/}	Application Rate (L/m ²) ^{3/}	Percent VOC Emitted ^{4/}	Conversion Factor (ton/lb)	Total VOC Emissions (tons)
Aprons (Tack Coat)	43,123	1.8	0.38	3%	1/2000	0.53
Aprons (Prime Coat)	43,123	1.8	0.38	20%	1/2000	10.54
Taxiways (Tack Coat)	32,546	1.8	0.38	3%	1/2000	0.40
Taxiways (Prime Coat)	32,546	1.8	0.38	20%	1/2000	7.96
Access Roads (Tack Coat)	27,748	1.8	0.38	3%	1/2000	0.34
Access Roads (Prime Coat)	27,748	1.8	0.38	20%	1/2000	6.78
Parking Lots (Tack Coat)	20,810	1.8	0.38	3%	1/2000	0.25
Parking Lots (Prime Coat)	20,810	1.8	0.38	20%	1/2000	5.09
Total (2010)						31.89

Notes:

m = meter

L = liter

lb = pound

VOC = volatile organic compounds.

1/ The areas to be paved were derived from the conceptual heliport layout drawing developed by HNTB Corporation.

2/ Solvent density is for kerosene. It is standard industry practice to use kerosene to liquify asphalt cement.

3/ Application rates are consistent with standard industry practice.

4/ The percent VOC emitted for the tack coat is consistent with the use of emulsified asphalt. The percent VOC emitted for the prime coat is based on data found in Table 4.5-1 of *Compilation of Air Pollutant Emission Factors* AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 4.5 "Asphalt Paving Operations", July 1979 (reformatted January 1995). The value is based on medium cure cutback and 35 percent, by volume, of diluent in cutback for the prime coat.

Source: Ricondo & Associates, Inc., 2007, using the sources noted above.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.2.7 Summary of Heliport Construction Emissions

A summary of total construction-related emissions by construction year for the proposed action is presented in **Table F-22**.

Table F-22

Construction Emissions Summary – Proposed Action

Year/Source	Pollutant Emissions (tons/year)					
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Fine particulate matter (PM _{2.5})
2008						
On-Road/Off-Site equipment ^{1/}	1.285	0.138	0.129	0.001	0.388	0.382
On-Road/On-Site equipment	0.168	0.047	0.017	0.000	0.000	0.000
Nonroad equipment ^{2/}	0.458	0.160	2.310	0.070	0.105	0.105
Land development	—	—	—	—	26.298	—
Wind erosion	—	—	—	—	1.467	—
Asphalt paving	—	0.000	—	—	—	—
Total	1.911	0.345	2.457	0.072	28.258	0.488
2009						
On-Road/Off-Site equipment ^{1/}	13.051	1.393	1.276	0.015	4.259	4.204
On-Road/On-Site equipment	0.412	0.113	0.041	0.000	0.001	0.001
Nonroad equipment ^{2/}	3.023	0.723	11.149	0.383	0.510	0.510
Land development	—	—	—	—	51.378	—
Wind erosion	—	—	—	—	1.568	—
Asphalt paving	—	0.000	—	—	—	—
Total	16.486	2.229	12.466	0.398	57.716	4.715
2010						
On-Road/Off-Site equipment ^{1/}	10.579	1.116	0.995	0.013	3.741	3.695
On-Road/On-Site equipment	0.432	0.114	0.041	0.000	0.001	0.001
Nonroad equipment ^{2/}	3.970	0.837	12.641	0.224	0.610	0.610
Land development	—	—	—	—	40.500	—
Wind erosion	—	—	—	—	2.348	—
Asphalt paving	—	31.891	—	—	—	—
Total	14.981	33.958	13.678	0.237	47.200	4.305

Notes:

Columns may not add to totals shown because of rounding.

1/ PM₁₀ emissions for on-road/off-site vehicles include entrained road dust. PM_{2.5} emissions were calculated using emission factors presented in Table F-15.2/ PM_{2.5} emissions for nonroad construction equipment are assumed to be equal to PM₁₀ emissions.

Sources: Ricondo & Associates, Inc., 2007, based on information obtained from The Louis Berger Group, the Clark County Department of Aviation, and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., April 2008

F.1.3 Summary of Emissions

Table F-23 presents a summary of total emissions for existing conditions, the Proposed Action, and the No Action alternative. Heliport construction emissions occur in 2008, 2009, and 2010, while heliport operational emissions occur in 2011 and 2017.

Table F-23

Summary of Emissions

Year/Source	Pollutant Emissions (tons/year)					
	Carbon Monoxide (CO)	Volatile Organic Compound (VOC)	Oxides of Nitrogen (NO _x)	Oxides of Sulfur (SO _x)	Particulate matter (PM ₁₀)	Fine particulate matter (PM _{2.5})
Existing Conditions						
Operational Emissions						
2004	35.701	6.069	15.940	2.247	4.818	4.446
Proposed Action						
Construction Emissions						
2008	1.911	0.345	2.457	0.072	28.258	0.488
2009	16.486	2.229	12.466	0.398	57.716	4.715
2010	14.981	33.958	13.678	0.237	47.200	4.305
Operational Emissions						
2011	38.946	6.306	12.150	2.359	6.321	4.865
2017	46.651	7.354	12.642	2.858	8.026	6.193
No Action Alternative						
Construction Emissions						
2008	—	—	—	—	—	—
2009	—	—	—	—	—	—
2010	—	—	—	—	—	—
Operational Emissions						
2011	28.920	4.761	9.469	1.873	4.149	3.861
2017	34.922	5.610	9.853	2.252	5.236	4.882

Note:

Columns may not add to totals shown because of rounding.

Sources: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3, and information obtained from The Louis Berger Group, the Clark County Department of Aviation, and HNTB Corporation.

Prepared by: Ricondo & Associates, Inc., April 2008

F.2 Dispersion Analysis

In addition to an operational emissions analysis, EDMS was used to conduct CO and PM₁₀ dispersion analyses for the Proposed Action and No Action alternative. Dispersion modeling was conducted for the Proposed Action and the No Action alternative in response to scoping comments received from

the U.S. EPA requesting an assessment of the potential for the Proposed Action to cause or contribute to exceedances of the CO and PM₁₀^{7,8} National Ambient Air Quality Standards (NAAQS).

Dispersion modeling using EDMS is significantly more complex in scope and in data input requirements than emissions inventory modeling. Users must (1) specify coordinates for sources of emissions, (2) assign helicopters to FATOs, taxiways, and gate areas, (3) develop appropriate operational profiles for mobile sources, (4) develop weather variables for individual hours, and (5) define other source-specific parameters for each emissions source included in the dispersion analysis. The user is also required to define individual receptors or grids of receptors for pollutant concentration estimation. In preparing for the dispersion analyses, heliport operations and physical planning data were assembled and documented.

The methodology followed, and key assumptions used for the dispersion modeling aspect of the study are described in the sections that follow.

F.2.1 Coordinates for Sources of CO and PM₁₀ Pollution

For McCarran International Airport, coordinates for major point (e.g., fuel storage facilities), area (e.g., parking lots, and aircraft gates), and line (e.g., roads, taxiways and takeoff and landing areas) sources of CO and PM₁₀ emissions were derived from drawings of existing helicopter air tour facilities. For the Heliport site, coordinates were derived from the conceptual heliport layout drawing developed by HNTB Corporation.⁹ The drawings provide configurations, lengths, and coordinates of takeoff and landing areas and taxiways, helicopter gate/apron areas, and other heliport facilities that are sources of CO and PM₁₀ emissions. These coordinates were input into the EDMS.

F.2.2 Helicopter FATO, Taxiway, and Gate Assignments

The EDMS dispersion module requires FATO, taxiway, and gate assignments for each active helicopter in the study. These assignments directly affect emissions concentrations and therefore are a crucial component of EDMS dispersion modeling.

Helicopter FATOs were modeled in EDMS and assigned an identifier based on the general direction of flight to and from the FATO. FATO use percentages were developed for each heliport site alternative by ASRC Aerospace Corporation. FATO use percentages for helicopter arrivals and departures were normalized and applied to helicopter LTO cycles for the dispersion analysis.

A system of taxiways connecting gate/apron areas to FATOs were modeled in EDMS. For McCarran International Airport, existing taxiways were used as necessary. Helicopters were assigned to taxiways based on the gate/FATO combination from/to which they were departing/arriving.

For operations at McCarran International Airport, LTO cycles were assigned to gate areas based on the distribution of existing helicopter operations. Helicopter LTO cycles at the Heliport site were

⁷ As described in Section 3.8.2 in Volume 1 of this EA, the nonattainment areas for CO and PM₁₀ roughly coincide with Hydrographic Area 212, which encompasses the Las Vegas region. Hydrographic Area 212 is designated as nonattainment for the 8-hour CO NAAQS and the 24-hour PM₁₀ NAAQS.

⁸ Because ozone is a regional pollutant and ambient concentrations can only be predicted using regional photochemical models that account for all sources of precursors, ozone was not evaluated in the EA dispersion modeling analysis.

⁹ HNTB Corporation. *Conceptual Heliport Layout Drawing*. July 2007.

distributed among gate areas according to the anticipated number of helicopter pad positions required for each air tour helicopter operator based on information obtained from the project definition manual prepared by HNTB Corporation.¹⁰

F.2.3 Helicopter Operational Profiles

Atmospheric dispersion of pollutants in EDMS is calculated for one hour periods. Because sources of CO and PM₁₀ emissions at airports/heliports vary in their activity or strength depending on the hour of the day, EDMS allows users to develop operational profiles to simulate variations in heliport-related traffic volumes that occur over the course of an entire year (8,760 hours). These operational profiles can be used to define hourly, daily, and monthly peaking characteristics for aircraft and ground access vehicles.

Operational profiles were defined for helicopters, ground access vehicles, and ground support equipment on the basis of available data. Adequate data for developing operational profiles for Strip tour helicopter activity was not available. Good data regarding the peaking characteristics of Grand Canyon helicopter air tour activity was available. Data used to develop helicopter operational profiles included: (1) monthly Grand Canyon helicopter air tour operations summaries reported by AirScene for 2004; and (2) hourly Grand Canyon helicopter air tour operations summaries for 2004 as documented in the *Clark County Department of Aviation Helicopter Noise Monitoring Report*.¹¹ **Table F-23** and **Table F-24** present the monthly and hourly operational profiles used in the dispersion analysis, respectively. These operational profiles were applied to helicopter and associated ground support equipment operations, motor vehicle trips on heliport access roadways and parking lots, and to fuel storage facility point sources. It should be noted that although operational profiles were generated based only on Grand Canyon helicopter air tour activity (the best data available), those profiles were applied to both Strip and Grand Canyon helicopter air tour activity for modeling purposes.

¹⁰ HNTB Corporation. *Final: Project Definition, Development, and Operational Manual, Southern Nevada Regional Heliport*. December 5, 2006.

¹¹ Brown-Buntin Associates, Inc. *Clark County Department of Aviation Helicopter Noise Monitoring Report*. September 2004.

Table F-23

Grand Canyon Helicopter Air Tour Monthly Operational Profile

Month	Grand Canyon Helicopter Air Tour Operations (2004)	Percent of Year	Percent of Maximum
January	4,318	6.72%	66.63%
February	4,100	6.38%	63.26%
March	5,706	8.88%	88.04%
April	6,265	9.75%	96.67%
May	4,957	7.71%	76.49%
June	5,320	8.28%	82.09%
July	5,583	8.69%	86.14%
August	5,359	8.34%	82.69%
September	6,244	9.71%	96.34%
October	6,481	10.08%	100.00%
November	5,768	8.97%	89.00%
December	4,182	6.51%	64.53%

Source: AirScene activity data provided by the Clark County Department of Aviation.
Prepared by: Ricondo & Associates, Inc., April 2008

Table F-24**Grand Canyon Helicopter Air Tour Hourly Operational Profile**

Hour	Grand Canyon Helicopter Air Tour Departures	Grand Canyon Helicopter Air Tour Arrivals	Total Grand Canyon Helicopter Air Tour Operations	Percent of Day	Percent of Maximum
1:00	0	0	0	0.00%	0.00%
2:00	0	0	0	0.00%	0.00%
3:00	0	0	0	0.00%	0.00%
4:00	0	0	0	0.00%	0.00%
5:00	0	0	0	0.00%	0.00%
6:00	3	0	3	1.58%	13.64%
7:00	11	0	11	5.79%	50.00%
8:00	6	5	11	5.79%	50.00%
9:00	10	8	18	9.47%	81.82%
10:00	11	5	16	8.42%	72.73%
11:00	1	9	10	5.26%	45.45%
12:00	12	10	22	11.58%	100.00%
13:00	5	4	9	4.74%	40.91%
14:00	9	10	19	10.00%	86.36%
15:00	6	7	13	6.84%	59.09%
16:00	6	8	14	7.37%	63.64%
17:00	10	8	18	9.47%	81.82%
18:00	6	4	10	5.26%	45.45%
19:00	0	7	7	3.68%	31.82%
20:00	0	9	9	4.74%	40.91%
21:00	0	0	0	0.00%	0.00%
22:00	0	0	0	0.00%	0.00%
23:00	0	0	0	0.00%	0.00%
0:00	0	0	0	0.00%	0.00%

Notes:

Hourly profile data was developed based on activity data from July 30, 2004 to August 12, 2004.

The departures, arrivals, and operations data presented in the table was used only to develop the hourly profile, not as a source of historical operations data for use in the air quality analysis.

Source: Ricondo & Associates, Inc. and Clark County Department of Aviation, based on data obtained from Brown-Buntin Associates, Inc. Clark County Department of Aviation Helicopter Noise Monitoring Report. September 2004.

Prepared by: Ricondo & Associates, Inc., April 2008

F.2.4 Meteorological Data

Meteorological data required for dispersion modeling includes surface data and upper air data. Surface data from the McCarran International Airport weather station was obtained in the format specified by the Support Center for Regulatory Atmospheric Modeling (SCRAM). Upper air data from the Mercury Desert Rock weather station was obtained in the TD-6201 format. Hourly meteorological data, including winds and temperature, were available for five years: 1988, 1989, 1990, 1991 and 1992. Localized surface and upper air data were not available for the Heliport site. Therefore, the surface data from the McCarran International Airport weather station and upper air

data from the Mercury Desert Rock weather station were used in the dispersion analysis for the Heliport site.

F.2.5 Dispersion Receptors

A 10x10 grid of receptors, spaced 1,000 feet apart, was established in EDMS for each potential heliport site to display the predicted CO and PM₁₀ concentrations. For each site, the receptor grid was centered over the Heliport site and over the general area where helicopter operations are based on the west side of McCarran International Airport. The receptor grids were also positioned to ensure that some receptors were located in areas where people could congregate, such as curbs, parking lots, and the aircraft aprons. **Exhibit F-2** and **Exhibit F-3** depict the location of the receptor grid with respect to the Heliport site and the west side of McCarran, respectively.

F.2.6 Dispersion Screening Analysis

A screening analysis was performed to select the meteorological year resulting in the greatest average 8-hour average concentration of CO and the greatest average 24-hour and annual average of PM₁₀. Each year of meteorological data was run in EDMS with the 2004 existing conditions McCarran International Airport scenario for the two pollutants. **Table F-25** presents the results of the screening analysis.

Table F-25

Dispersion Screening Analysis

Pollutant/Averaging Period	Concentration by Year				
	1988	1989	1990	1991	1992
CO 8-Hour Average (ppm)	0.000589787	0.000545936	0.000656323	0.000774880	0.000759387
PM ₁₀ 24-Hour Average (µg/m ³)	0.054837011	0.050931848	0.061189776	0.070666862	0.069847182

Notes:

CO = carbon monoxide

PM₁₀ = particulate matter

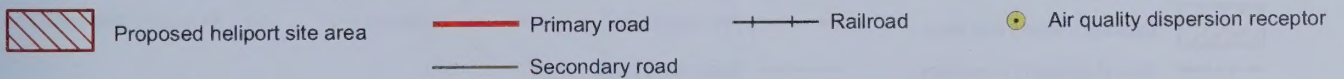
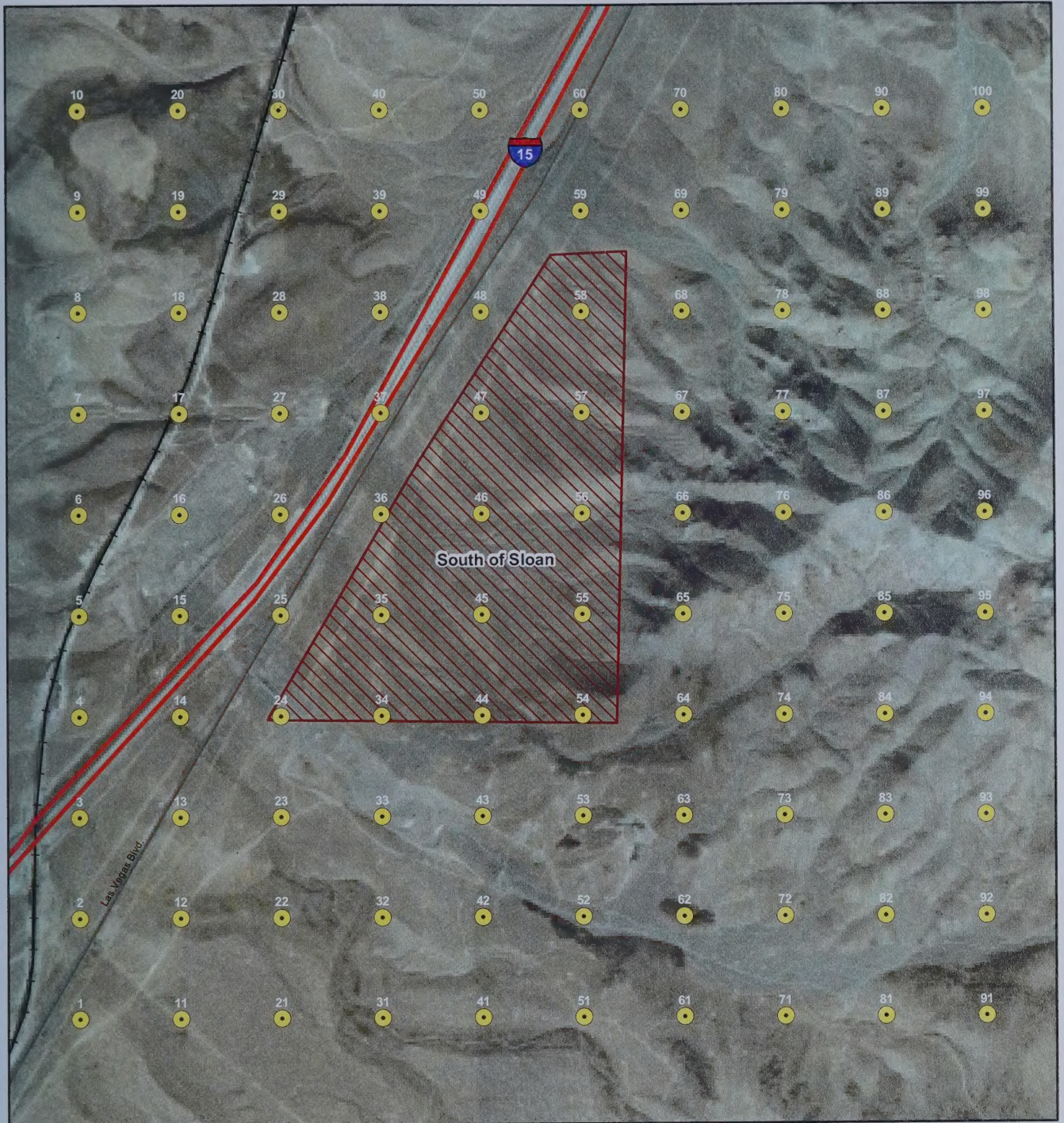
µg/m³ = Micrograms per cubic meter

ppm = Parts per million

Source: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3.

Prepared by: Ricondo & Associates, Inc., April 2008

As shown, the 1991 meteorological year yielded the highest 8-hour average concentrations of CO, as well as the highest 24-hour and annual average concentrations of PM₁₀, and was therefore selected as the meteorological analysis year for the dispersion analyses conducted in EDMS. An additional screening was conducted to determine the "worst case" year for Proposed Action and No Action alternative in terms of helicopter operations and emissions. The analysis year of 2017 yielded the greatest number of helicopter operations for each heliport site alternative.

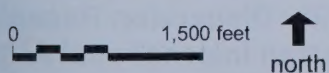


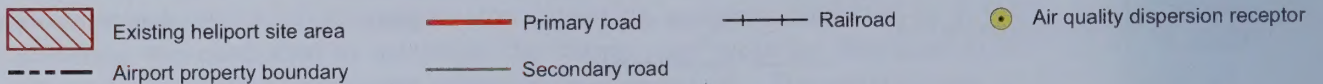
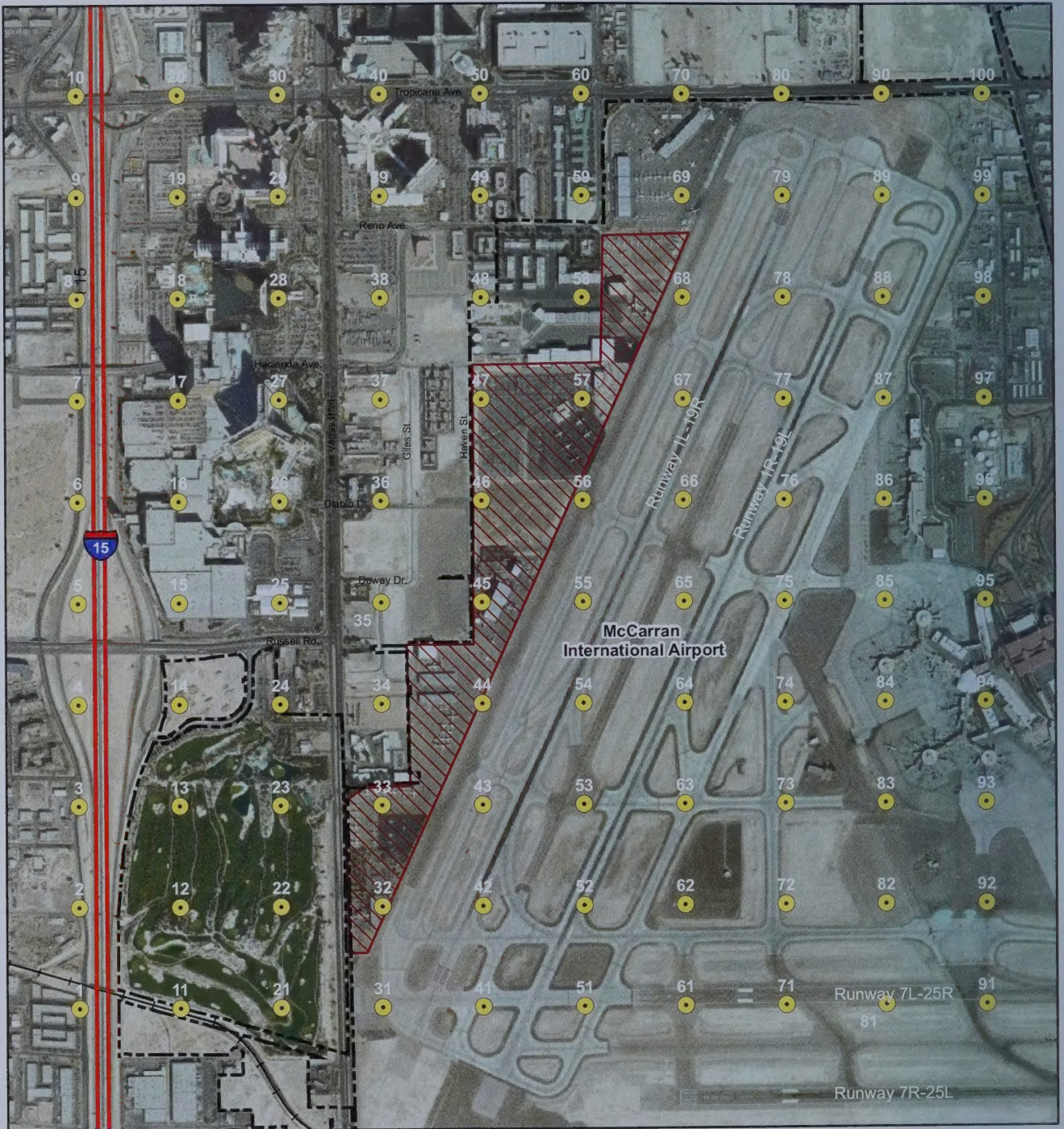
Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph); Ricondo & Associates, Inc., January 2006 (receptor locations).

Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit F-2

Air Quality Dispersion Receptors Proposed Heliport Site

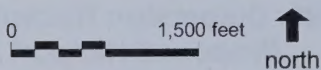




Sources: Clark County Department of Aviation; AirPhotoUSA, February 2007 (aerial photograph); Ricondo & Associates, Inc., January 2006 (receptor locations).

Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit F-3



Air Quality Dispersion Receptors McCarran International Airport

December 2008

As a result of the screening analysis, dispersion modeling was conducted for CO (8-hour average) and PM₁₀ (24-hour average) using 1991 meteorological data for the following cases:

- Proposed Action: Heliport site (2017)
- No Action alternative: McCarran International Airport (2017)

Although both the Proposed Action and No Action alternative assume that helicopter air tour operations would be performed at multiple locations, dispersion modeling was conducted only for the facility expected to accommodate the highest level of helicopter operations, according to the demand forecasts.

F.2.7 Dispersion Modeling Results

Table F-26 and **Table F-27** present, by receptor, the estimated 8-hour average CO concentrations and 24-hour average PM₁₀ concentrations for each of the modeled cases described in Section F.2.6, respectively. The rank-ordered 8-hour average CO concentrations are expressed in parts per million (ppm). The rank-ordered 24-hour PM₁₀ concentrations are expressed in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

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Table F-26

Dispersion Modeling Results – Proposed Action

8-Hour Average CO Concentrations (ppm)						24-Hour Average PM ₁₀ Concentrations (µg/m ³)					
Rank	Receptor	Concentration	Rank	Receptor	Concentration	Rank	Receptor	Concentration	Rank	Receptor	Concentration
1	46	0.0032972982	51	17	0.0001266248	1	56	1.0082460000	51	30	0.0270055342
2	56	0.0029762550	52	79	0.0001218166	2	57	0.9305163836	52	97	0.0266905753
3	57	0.0025228940	53	86	0.0001216002	3	45	0.8735523562	53	41	0.0265024110
4	45	0.0023548993	54	32	0.0001191514	4	46	0.4021498082	54	32	0.0260076164
5	47	0.0011640813	55	14	0.0001165667	5	55	0.2280466849	55	17	0.0257144110
6	55	0.0008052941	56	5	0.0001159155	6	47	0.1903051233	56	99	0.0253633699
7	67	0.0006824591	57	41	0.0001156347	7	67	0.1583080822	57	79	0.0249510959
8	36	0.0006156677	58	19	0.0001153109	8	66	0.1502471233	58	52	0.0247251507
9	58	0.0006115288	59	18	0.0001144931	9	35	0.1408802466	59	14	0.0238511781
10	35	0.0006107018	60	6	0.0001131583	10	58	0.1406343836	60	18	0.0237998630
11	66	0.0005992940	61	13	0.0001111031	11	36	0.1151917534	61	5	0.0237320822
12	48	0.0005440197	62	99	0.0001085021	12	44	0.1138863836	62	19	0.0222631233
13	44	0.0005264181	63	97	0.0001081137	13	48	0.1069428219	63	13	0.0220337534
14	37	0.0004529167	64	20	0.0001050059	14	37	0.0865272603	64	85	0.0218956986
15	59	0.0004002556	65	52	0.0001042220	15	34	0.0836852603	65	12	0.0218555616
16	38	0.0003376428	66	31	0.0000982226	16	77	0.0770754521	66	6	0.0217352055
17	34	0.0003336767	67	74	0.0000931342	17	54	0.0740464384	67	63	0.0208169589
18	77	0.0003262320	68	12	0.0000919142	18	59	0.0641908493	68	74	0.0205340274
19	54	0.0003089082	69	63	0.0000896624	19	65	0.0639452329	69	20	0.0204443288
20	49	0.0003036874	70	85	0.0000880530	20	38	0.0627176438	70	31	0.0201733425
21	68	0.0002896816	71	7	0.0000859746	21	68	0.0625814247	71	22	0.0185238356
22	26	0.0002803051	72	4	0.0000847292	22	49	0.0616805753	72	96	0.0182015068
23	43	0.0002637902	73	22	0.0000822386	23	76	0.0591377534	73	4	0.0178054247
24	25	0.0002634209	74	100	0.0000810825	24	25	0.0570484384	74	100	0.0173035890
25	65	0.0002608516	75	10	0.0000785707	25	43	0.0565212329	75	51	0.0171962740
26	78	0.0002448407	76	96	0.0000780392	26	78	0.0560379452	76	7	0.0170218904
27	39	0.0002400556	77	80	0.0000751696	27	26	0.0509227671	77	80	0.0157408219
28	76	0.0002285312	78	2	0.0000745902	28	39	0.0480693425	78	84	0.0154995342
29	27	0.0002132113	79	8	0.0000743880	29	27	0.0447359178	79	10	0.0154908767
30	60	0.0002062579	80	9	0.0000739144	30	87	0.0438780274	80	9	0.0154006575
31	24	0.0002026263	81	51	0.0000736855	31	88	0.0424424658	81	8	0.0153093699
32	50	0.0001940500	82	84	0.0000725731	32	50	0.0420357534	82	2	0.0152971507
33	28	0.0001913187	83	90	0.0000714381	33	24	0.0414389589	83	1	0.0150566575
34	69	0.0001844078	84	3	0.0000704732	34	60	0.0397413973	84	3	0.0150380548
35	88	0.0001810144	85	62	0.0000676954	35	53	0.0382432329	85	95	0.0149861370
36	87	0.0001796902	86	1	0.0000646181	36	42	0.0373220274	86	90	0.0149265753
37	40	0.0001762184	87	21	0.0000622559	37	33	0.0369131233	87	62	0.0142476164
38	16	0.0001672641	88	95	0.0000599599	38	28	0.0368429863	88	73	0.0140940548
39	29	0.0001671874	89	73	0.0000588427	39	69	0.0363572055	89	21	0.0138371781
40	42	0.0001661101	90	94	0.0000537290	40	23	0.0363227123	90	11	0.0120357808
41	53	0.0001631173	91	61	0.0000531792	41	64	0.0359464384	91	94	0.0118106575
42	33	0.0001627618	92	11	0.0000527142	42	15	0.0342832603	92	83	0.0115524110
43	15	0.0001609467	93	83	0.0000485566	43	40	0.0342606849	93	61	0.0108489863
44	23	0.0001496238	94	93	0.0000437658	44	75	0.0341885753	94	72	0.0105389589
45	75	0.0001470391	95	72	0.0000434624	45	29	0.0323279452	95	93	0.0094995890
46	64	0.0001389816	96	71	0.0000382170	46	16	0.0312676164	96	71	0.0090063288
47	70	0.0001300961	97	82	0.0000318630	47	98	0.0305911233	97	82	0.0072507123
49	30	0.0001295580	98	92	0.0000302337	49	86	0.0296876986	98	92	0.0070907123
49	98	0.0001293504	99	81	0.0000240936	49	70	0.0287366575	99	81	0.0055091507
50	89	0.0001279686	100	91	0.0000207716	50	89	0.0280052055	100	91	0.0047627671

Notes:

µg/m³ = micrograms per cubic meter; ppm = parts per million.CO = carbon monoxide; PM₁₀ = particulate matter.

Source: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3.

Prepared by: Ricondo & Associates, Inc., December 2008

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Table F-27

Dispersion Modeling Results – No Action Alternative: McCarran International Airport

8-Hour Average CO Concentrations (ppm)						24-Hour Average PM ₁₀ Concentrations (µg/m ³)					
Rank	Receptor	Concentration	Rank	Receptor	Concentration	Rank	Receptor	Concentration	Rank	Receptor	Concentration
1	68	0.0086934028	51	31	0.0003190358	1	69	1.4370646575	51	36	0.0372570959
2	56	0.0044277135	52	84	0.0003146270	2	68	0.6566164110	52	84	0.0365144384
3	67	0.0039769979	53	37	0.0002986671	3	79	0.3849418356	53	95	0.0339121370
4	69	0.0037112239	54	73	0.0002776533	4	56	0.3339703836	54	73	0.0322878356
5	55	0.0026777377	55	41	0.0002687226	5	55	0.3149350959	55	22	0.0316507945
6	79	0.0024539815	56	38	0.0002686022	6	67	0.3061348219	56	37	0.0313173699
7	66	0.0020619647	57	62	0.0002651917	7	70	0.2493128767	57	51	0.0312209863
8	57	0.0020469107	58	39	0.0002498700	8	32	0.2109595890	58	62	0.0310034521
9	78	0.0020339220	59	94	0.0002428594	9	66	0.1848508219	59	39	0.0301103288
10	45	0.0017138690	60	83	0.0002165290	10	80	0.1812053151	60	38	0.0296977534
11	77	0.0015511721	61	51	0.0002130623	11	78	0.1688266849	61	94	0.0268944110
12	43	0.0015120318	62	26	0.0001996215	12	57	0.1633559726	62	83	0.0261747397
13	44	0.0014713350	63	40	0.0001972076	13	89	0.1580980274	63	23	0.0252652603
14	70	0.0014029943	64	72	0.0001932750	14	90	0.1382465205	64	25	0.0246840000
15	32	0.0013864402	65	23	0.0001910151	15	77	0.1323424384	65	61	0.0245702466
16	89	0.0011755520	66	25	0.0001876336	16	43	0.1295668219	66	24	0.0237956164
17	88	0.0011529262	67	22	0.0001831447	17	44	0.1265460548	67	40	0.0222931507
18	58	0.0011300754	68	27	0.0001816644	18	45	0.1262832329	68	72	0.0218400548
19	76	0.0010691248	69	24	0.0001795594	19	88	0.1120721644	69	26	0.0217447123
20	54	0.0010615664	70	28	0.0001779214	20	42	0.1116544110	70	28	0.0209168767
21	65	0.0010165237	71	61	0.0001721647	21	65	0.1094994795	71	21	0.0206343014
22	87	0.0008936284	72	93	0.0001682385	22	58	0.1048626849	72	27	0.0191698356
23	80	0.0008081741	73	82	0.0001584439	23	76	0.1017324110	73	82	0.0190868493
24	59	0.0007935622	74	29	0.0001506278	24	59	0.1012051507	74	29	0.0183565479
25	46	0.0007668084	75	30	0.0001428454	25	54	0.0978298630	75	93	0.0183551233
26	99	0.0007578103	76	71	0.0001398605	26	99	0.0943325479	76	71	0.0178600274
27	42	0.0007553500	77	21	0.0001333873	27	100	0.0860427671	77	14	0.0163644658
28	98	0.0007370978	78	92	0.0001269035	28	46	0.0844927123	78	30	0.0156820548
29	90	0.0007297327	79	16	0.0001265552	29	87	0.0801051233	79	81	0.0153209589
30	53	0.0006880059	80	17	0.0001210175	30	53	0.0755631233	80	92	0.0149954521
31	86	0.0006631447	81	15	0.0001180854	31	98	0.0721005205	81	19	0.0145442466
32	75	0.0006468727	82	81	0.0001178091	32	60	0.0689066575	82	17	0.0140448219
33	64	0.0006221271	83	18	0.0001145284	33	75	0.0677722740	83	18	0.0133068493
34	100	0.0006132055	84	19	0.0001087152	34	33	0.0670944932	84	16	0.0132504932
35	47	0.0006127316	85	14	0.0001072902	35	64	0.0659215342	85	91	0.0132340548
36	97	0.0006120640	86	13	0.0000997339	36	47	0.0643285753	86	13	0.0128117260
37	60	0.0005674733	87	12	0.0000989600	37	86	0.0614447671	87	12	0.0125982740
38	33	0.0005385412	88	20	0.0000971010	38	31	0.0614120274	88	15	0.0123131781
39	48	0.0004999930	89	91	0.0000969172	39	97	0.0608390685	89	11	0.0121312603
40	96	0.0004823600	90	6	0.0000950120	40	52	0.0503050959	90	20	0.0120380822
41	85	0.0004385579	91	7	0.0000866062	41	48	0.0496385479	91	5	0.0101926027
42	63	0.0004104027	92	5	0.0000835444	42	49	0.0493152329	92	6	0.0099816438
43	74	0.0004093998	93	8	0.0000811273	43	63	0.0465168767	93	7	0.0099545753
44	49	0.0004070002	94	11	0.0000806947	44	96	0.0458693699	94	8	0.0097609041
45	52	0.0003958068	95	9	0.0000769682	45	74	0.0454527397	95	3	0.0095226027
46	34	0.0003900516	96	4	0.0000736047	46	85	0.0454041370	96	9	0.0094093151
47	35	0.0003426902	97	10	0.0000722993	47	34	0.0436141096	97	4	0.0084640274
48	36	0.0003384595	98	3	0.0000650629	48	41	0.0422481644	98	10	0.0083525205
49	95	0.0003365934	99	2	0.0000633142	49	35	0.0392864384	99	1	0.0078802740
50	50	0.0003312094	100	1	0.0000611134	50	50	0.0380912055	100	2	0.0075927123

Notes:

µg/m³ = micrograms per cubic meter; ppm = parts per millionCO = carbon monoxide; PM₁₀ = particulate matter

Source: Ricondo & Associates, Inc., 2007, based on output from the Emissions and Dispersion Modeling System, Version 4.3.

Prepared by: Ricondo & Associates, Inc., December 2008

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F.3 Emissions beneath Overflight Area

EDMS does not estimate emissions or concentrations of emissions along potential helicopter flight corridors. To estimate the potential effects of helicopter emissions along these corridors, total helicopter flight time in hours was calculated for each heliport flight corridor scenario for the Proposed Action and No Action alternative. It can be inferred from the analysis that helicopter flight corridors that would accommodate more total helicopter flight hours per year would experience higher levels of helicopter emissions and pollutant concentrations. **Equation F-6** was used to calculate total helicopter flight hours per year for each flight corridor option associated with the Proposed Action and the No Action alternative.

Equation F-6

Helicopter Flight Time Calculation Equation

$$HFT_i = [(T_i)(OPS_i)]/60$$

$$T_i = [(DD_i * 60)/SD] + [(DC_i * 60)/SC]$$

$$OPS_i = (OPS_a)(AP_i) + (OPS_d)(DP_i)$$

where:

- HFT_i = helicopter flight time (hours) on corridor i
- T_i = time (minutes) required to fly to/from rendezvous point on corridor i
- OPS_i = total operations (arrivals and departures) on corridor i
- OPS_a = total annual arrivals
- OPS_d = total annual departures
- AP_i = percentage of arrivals on corridor i
- DP_i = percentage of departures on corridor i
- DD_i = one-way distance (nautical miles) in climb/descent on corridor i
- DC_i = one-way distance (nautical miles) in cruise on corridor i
- SD = average climb/descent speed (nautical miles per hour)
- SC = average cruise speed (nautical miles per hour)

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc., April 2008

Potential flight corridor distances were calculated from data provided by the CCDOA. Information regarding helicopter climb/descent and cruise speed was obtained from interviews with helicopter air tour operators. Arrival and departure percentages on each potential helicopter flight corridor were obtained from ASRC Aerospace Corporation. **Table F-28** shows the total estimated helicopter flight time in hours for each flight corridor scenario associated with the Heliport site in 2011 and 2017.

Table F-28

Annual Helicopter Flight Times

Alternatives and Optional Flight Corridors ^{1/}	Helicopter Flight Hours per Year			
	2011		2017	
	Helicopter Flight Hours	Difference between Proposed Action and No Action ^{2/}	Helicopter Flight Hours	Difference between Proposed Action and No Action ^{2/}
Proposed Action				
Option A	28,087	14.5 %	35,519	18.6 %
Option B	27,842	13.5 %	35,210	17.5 %
Option C	29,997	22.3 %	37,933	26.6 %
No Action Alternative	24,534	n.a.	29,957	n.a.

Notes:

- 1/ Proposed Action options differ based on the primary flight corridor that is anticipated to be used to and from the Heliport site, in conjunction with existing flight corridors to and from McCarran International Airport.
- 2/ The difference in helicopter flight hours were calculated by subtracting the No Action alternative from each of the Proposed Action options.

Source: Ricondo & Associates, Inc., based on information provided by ASRC Aerospace Corporation, the Clark County Department of Aviation, and interviews with helicopter air tour operators.

Prepared by: Ricondo & Associates, Inc., April 2008

F.4 Hazardous Air Pollutants – Emissions Inventory

Hazardous Air Pollutants (HAPs) are compounds for which there are no NAAQS but are still considered by the U.S. EPA as air pollutants. For this evaluation, an emission inventory of HAPs has been prepared from the same set of emission source (i.e., aircraft, GSE, motor vehicles) data and information collected and developed for the criteria-based air emission inventories presented previously in this section of the Final EA.

Emissions of 19 different HAPs commonly associated with aviation activities were evaluated in the emission inventory analysis. Separate emission inventories were prepared for the Proposed Action and the No Action alternative. Both emission inventories relied on criteria pollutant emissions data developed for calendar year 2017 – the year within the planning horizon of the Final EA with the greatest level of Grand Canyon helicopter air tour activity. Specifically, data regarding emissions of volatile organic compounds (VOC) were used with industry accepted speciation profiles to develop the HAPs emission inventories. The following bullets provide additional information regarding the emission estimates developed for the primary sources of emissions (i.e., helicopters, GSE, and motor vehicles):

- VOC emissions data were converted to total organic compounds (TOG) using source specific conversion factors. These conversion factors are consistent with VOC to TOG conversion factors that have been incorporated into EDMS 5.1, which was released on September 19, 2008.
- EDMS 5.1 incorporates FAA- and EPA-approved speciation profiles for 395 speciated hydrocarbons (HC). EPA considers 44 of the speciated hydrocarbons to be HAPs. The speciation profiles (in the form of mass fractions of TOG) can be used to estimate quantities

of individual HAPs. Aircraft speciation profiles incorporated into EDMS 5.1 were used to estimate HAPs emissions from helicopter operations.

- U.S. EPA HAP Speciation Profile 3161 was used to determine HAPs emissions from GSE.
- U.S. EPA HAP Speciation Profile 1314 was used to determine HAPs emissions from on-road motor vehicles.

Table F-29 presents HAPs levels in 2017 under the Proposed Action. **Table F-30** presents HAPs levels in 2017 under the No Action alternative. As presented in Tables F-29 and F-30, formaldehyde is the HAP of greatest abundance, which is typical of aviation activity. Acetaldehyde, acrolein, toluene, and benzene are other HAPs emitted by heliport-related emission sources. HAPs levels are anticipated to be slightly higher under the Proposed Action than under the No Action alternative, which is consistent with the air quality analyses conducted for criteria pollutants.

Table F-29

2017 Hazardous Air Pollutants Emissions Inventory – Proposed Action

Hazardous Air Pollutant	Helicopters	2017 Emissions (tons/year)		
		Ground Support Equipment	On-Road Motor Vehicles	Total
Formaldehyde	0.794	0.082	0.023	0.899
Methyl alcohol	0.116	0.000	0.000	0.117
Benzene	0.108	0.011	0.057	0.176
Acetaldehyde	0.276	0.041	0.015	0.332
Napthalene	0.035	0.001	0.003	0.038
O-xylene	0.011	0.002	0.021	0.034
Isopropylbenzene (cumene)	0.000	0.000	0.000	0.001
Ethyl benzene	0.011	0.002	0.021	0.033
Styrene	0.020	0.000	0.005	0.025
1,3 - butadiene	0.109	0.001	0.008	0.118
Acrolein	0.158	0.000	0.001	0.159
Toluene	0.041	0.008	0.145	0.195
Phenol (carbolic acid)	0.047	0.000	0.000	0.047
M & P - xylene	0.018	0.001	0.060	0.079
Propionaldehyde	0.047	0.005	0.001	0.053
Acetone	0.024	0.042	0.007	0.073
2-methylnaphthalene	0.026	0.000	0.000	0.026
Benzaldehyde	0.030	0.004	0.002	0.036
N-heptane	0.004	0.000	0.004	0.008

Sources: Helicopter speciation profiles – EDMS 5.1; U.S. EPA SPECIATE Profile No. 3161, *Diesel Exhaust: Light & Heavy* and SPECIATE Profile No. 1314, *10% Ethanol Exhaust*

Prepared by: Ricondo & Associates, Inc., April 2008

Table F-30

2017 Hazardous Air Pollutants Emissions Inventory – No Action Alternative

Hazardous Air Pollutant	Helicopters	2017 Emissions (tons/year)		Total
		Ground Support Equipment	On-Road Motor Vehicles	
Formaldehyde	0.627	0.065	0.005	0.697
Methyl alcohol	0.092	0.000	0.000	0.092
Benzene	0.086	0.009	0.013	0.107
Acetaldehyde	0.218	0.032	0.003	0.253
Napthalene	0.028	0.000	0.001	0.029
O-xylene	0.008	0.001	0.005	0.015
Isopropylbenzene (cumene)	0.000	0.000	0.000	0.000
Ethyl benzene	0.009	0.001	0.005	0.015
Styrene	0.016	0.000	0.001	0.017
1,3 - butadiene	0.086	0.001	0.002	0.088
Acrolein	0.125	0.000	0.000	0.125
Toluene	0.033	0.006	0.033	0.072
Phenol (carbolic acid)	0.037	0.000	0.000	0.037
M & P - xylene	0.014	0.000	0.014	0.028
Propionaldehyde	0.037	0.004	0.000	0.041
Acetone	0.019	0.033	0.002	0.053
2-methylnaphthalene	0.021	0.000	0.000	0.021
Benzaldehyde	0.024	0.003	0.000	0.027
N-heptane	0.003	0.000	0.001	0.004

Sources: Helicopter speciation profiles – EDMS 5.1; U.S. EPA SPECIATE Profile No. 3161, *Diesel Exhaust: Light & Heavy* and SPECIATE Profile No. 1314, *10% Ethanol Exhaust*
 Prepared by: Ricondo & Associates, Inc., April 2008

Appendix G. Scoping

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Appendix G. Scoping

G.1 Introduction

The Clark County Department of Aviation (CCDOA) requested input on the scope of the analyses to be conducted for the Environmental Assessment (EA) for a Southern Nevada Regional Heliport (the Heliport) by hosting a public scoping meeting, an agency scoping meeting, a 30-day scoping period, an Open House for the Seven Hills/Westgate Westgate and Anthem areas. When an additional build alternative was added to the EA, the CCDOA notified agencies and interested parties of the addition and hosted a second 30-day comment period. Additionally, the CCDOA maintained a website of information pertaining to this outreach at <http://www.ricondoprojects.com/heliport/>, and provided a contact name, phone number and address for questions and concerns relating to the preparation of the EA.

G.2 Scoping Meetings and Notices of Intent

The CCDOA held a scoping meeting to accept comments on conditions, studies, plans, or considerations that may be relevant to determining the potential environmental consequences of the proposed action or its alternatives.

An agency scoping meeting was held in the County Commission Chambers at 1:30 p.m. on Monday June 28, 2004, to solicit comments from agencies with regulatory authority of the construction and operation of the Proposed Action. A notice of intent to hold an agency scoping meeting was sent to multiple federal and state agencies and is included as **Attachment G-1**.

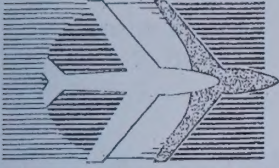
The public scoping meeting was on Monday, June 28, 2004, at 6:00 p.m. in the County Commission Chambers, 500 S. Grand Central Parkway, Las Vegas, Nevada. A notice of intent to hold this public scoping meeting was sent to interested parties and is included as **Attachment G-2**. The public scoping meeting was advertised in the Las Vegas Review Journal on June 13, 20, and 27, 2004. This notification is included as **Attachment G-3**. The affidavit of publication is included as **Attachment G-4**.

Additionally, an Open House for the Seven Hills/Westgate and Anthem areas was held on Thursday, July 15th 2004, at 6:30 p.m. at Elise L. Wolff Elementary School, 1001 Seven Hills Drive, Henderson, Nevada. The Open House addressed issues related to the Southern Nevada Regional Heliport and the environmental review process. The Open House notice is included as **Attachment G-5**.

Originally, the CCDOA identified four build alternatives in addition to the Proposed Action, as well as a No Action alternative in which commercial helicopter operations would remain based at McCarran International Airport. In October 2004, the Sunrise Landfill site, a fifth build alternative, was added to the scope of this EA, for a total of seven alternatives. A public meeting regarding the addition of the Sunrise Landfill alternative site was held with the Sunrise Manor Town Advisory Board on Thursday, December 2, 2004, at 7:00 p.m., Hollywood Recreation and Community Center, 1650 S. Hollywood, Las Vegas, Nevada 89110. Comments were to be sent to the CCDOA by Friday, December 17, 2004. A notice of intent to add the Sunrise Landfill alternative site to the EA was sent to interested parties and is included as **Attachment G-6**. A notice of intent to add the Sunrise Landfill alternative site to the EA was sent to agencies and is included as **Attachment G-7**.

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LAS VEGAS



McCARRAN INTERNATIONAL AIRPORT

Department of Aviation

RANDALL H. WALKER

DIRECTOR

ROSEMARY A. VASSILIADIS

DEPUTY DIRECTOR

POSTAL BOX 11005

LAS VEGAS, NEVADA 89111-1005

(702) 261-5211

FAX (702) 597-9553

E-MAIL: webmaster2@mccarran.com

June 7, 2004

U.S. Senator Harry Reid
 Lloyd George Federal Building
 333 Las Vegas Boulevard South
 Suite 8016
 Las Vegas, Nevada 89101

Re: NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL ASSESSMENT FOR A
 SOUTHERN NEVADA REGIONAL HELIPORT

Dear Senator Reid:

The Clark County Department of Aviation (CCDOA) plans to prepare an Environmental Assessment (EA), consistent with the National Environmental Policy Act of 1969 (NEPA) and Federal Aviation Administration (FAA) Order 5050.4A, *Airport Environmental Handbook*, to (1) obtain the necessary federal, State, and local approvals for a Southern Nevada Regional Heliport, and (2) be eligible to apply for Airport Improvement Program (AIP) grants from the FAA to assist in financing the proposed design and construction. The purpose of this letter is to inform you of the project and solicit input on any specific concerns or issues you would like addressed in the EA that could be of importance to your agency. This scoping process will assist the CCDOA in identifying (1) appropriate environmental issues to be analyzed, (2) boundaries of the potential impacts of the proposed project and its alternatives, (3) a range of feasible and prudent alternatives to be considered, and (4) potential mitigation measures.

Purpose and Need

Tour-related helicopter operations in the Las Vegas Valley have increased substantially in the past 10 years, often affecting older residential areas as a result of an increased number of overflights. Recently, the CCDOA conducted a study in which it was estimated that over 100,000 residents live within one-third of a mile of the centerline of the flight corridors used by helicopters providing tours of either the Grand Canyon or the Las Vegas Strip. The majority of these helicopters are based at McCarran International Airport.

Although a number of noise reduction measures have been implemented (i.e., increasing the helicopter flight altitudes, improving compliance with preferred routes, integrating quiet technology), the community continues to request that additional, beneficial measures be pursued. To alleviate the effects of overflights of existing residential areas by helicopter tour operators, the Advisory Committee on Helicopter Noise recommended to the Clark County Board of Commissioners (BOCC) in June 2003 that Clark County relocate the base of helicopter operations away from the existing residential areas in the County. Additionally, in June 2003, the Nevada State Legislature amended the Nevada Revised Statutes, Chapter 495, requiring Clark County to designate a preferred non-urban commercial heliport site by 2004.

The purpose of the Southern Nevada Regional Heliport is to reduce overflights of existing residential areas in Clark County by helicopter tour operators in a timely manner. The Southern Nevada Regional Heliport is needed, therefore, to (1) provide a non-urban heliport facility, (2) relocate existing flight corridors away from existing residential areas, and (3) address these needs in a timely manner. The

Clark County Board of Commissioners

Chip Maxfield, Chair • Myrna Williams, Vice-Chair

Yvonne Atkinson Gates • Mark A. James • Mary Kincaid-Chauncey • Rory Reid • Bruce Woodbury



Senator Reid
June 7, 2004
Page 2

CCDOA intends the facility to be operational as expeditiously as possible, with a target date of not later than 2008.

The selection of a non-urban heliport site was a product of two assessments completed by the CCDOA: the *Needs Assessment for a Southern Nevada Regional Heliport* and the *Site Suitability Assessment for a Southern Nevada Regional Heliport*. (Both reports are available for review at www.mccarran.com by clicking on "About the Airport," then "Current Projects," and finally "Regional Heliport.") The Needs Assessment, completed in November 2003, documents the physical and operational characteristics of commercial helicopter operations in Southern Nevada, and identifies generalized facility and area requirements of a non-urban heliport that would accommodate multiple commercial tour helicopter operators. During the Site Suitability Assessment, completed in December 2003, a number of potential heliport sites were evaluated and screened, and the pros and cons of each location were assessed. It was determined in the Site Suitability Assessment that, while Jean Airport and a candidate site located in the Eldorado Valley (near Boulder City) are suitable for heliport development, the candidate site located along Interstate 15 at the Sloan Interchange (the GoKart/Sloan site) would best accommodate a non-urban heliport. On February 3, 2004, the BOCC recommended an area between two (2) and five (5) statute miles south of the GoKart/Sloan site (referred to as the South of Sloan site) as the preferred site for the non-urban heliport. The BOCC directed the CCDOA to retain the GoKart/Sloan site as an alternative to be pursued if acquisition of the new site is either significantly delayed (the acquisition will require Congressional action which needs to be completed by mid-2005) or if other conditions delay development of the heliport at the preferred South of Sloan site. (As mentioned previously, the facility needs to be operational as expeditiously as possible, with a target date of not later than 2008.)

Proposed Action

The proposed action is to construct and operate the Southern Nevada Regional Heliport on the site designated by the Board of County Commissioners on February 3, 2004, referred to as South of Sloan and shown on **Exhibit 1**. The South of Sloan site is on the east side of Interstate 15 and Las Vegas Boulevard South, approximately 5.5 miles south of St. Rose Parkway. The site is approximately 229 acres, and is currently owned by the U.S. Department of the Interior, Bureau of Land Management. In May 2004, Senator Harry Reid of Nevada introduced legislation providing for the transfer of this site to Clark County for construction and operation of the Southern Nevada Regional Heliport. The site is within unincorporated Clark County, undeveloped, and clear of structures.

Construction of the Southern Nevada Regional Heliport and the identification of commercial flight corridors for helicopter tour operations between the heliport and the Grand Canyon include the following primary project components, which would be similar for all build alternatives:

- Identify commercial helicopter flight corridors
- Construct approximately 72,600 square yards of paved apron for helicopter parking and maneuvering
- Construct approximately 44,000 square feet of terminal facilities
- Construct approximately 55,000 square feet of maintenance facilities
- Construct approximately 10,000 square feet of CCDOA office facilities
- Construct circulation roadways with a drop-off lane and curbfront
- Construct paved parking for approximately 240 automobiles and 55 limousines and/or vans

Senator Reid
June 7, 2004
Page 3

- Construct a hydrant fueling system consisting of above ground storage tanks and underground distribution lines
- Construct two paved touchdown and liftoff (TLOF) areas
- Construct parallel taxiing routes connecting the TLOF and apron areas
- Construct a paved access road

In addition, the South of Sloan site would require the following utilities components:

- Construct a potable water supply and/or storage tank system
- Construct a wastewater package treatment facility
- Upgrade overhead or underground electrical facilities
- Extend existing telephone service equipment into the site

Alternatives

The CCDOA has identified four build alternatives to the proposed action, as well as a no action alternative in which commercial helicopter operations would remain based at McCarran International Airport. The alternatives are shown in relation to the proposed action on Exhibit 1, and include:

- GoKart/Sloan
- Henderson Executive Airport
- Jean Airport
- Eldorado Valley
- McCarran International Airport (no action alternative)

As previously discussed, the BOCC selected the South of Sloan site as the preferred site for the non-urban heliport, and retained the GoKart/Sloan site as an alternative if acquisition or development of the proposed action (South of Sloan site) is significantly delayed. In this EA, all alternatives listed above will be assessed to the same level of detail as the proposed action. Each build alternative would require the primary project components listed above to accommodate the Southern Nevada Regional Heliport; however, each alternative would have differing flight corridors and utility requirements.

Please review the project description in this letter and inform us in writing by August 2, 2004, of any conditions, studies, plans, or considerations that you believe may be relevant to determining the potential environmental impacts of this project. Please address any comments to either:

Teresa Arnold
Planning Division
McCarran International Airport
P.O. Box 11005
Las Vegas, NV 89111-1005

or:

ccdoaheliporteascopeing@mccarran.com

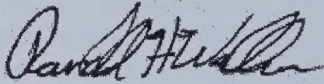
Senator Reid
June 7, 2004
Page 4

The CCDOA will also conduct a formal project scoping meeting with interested agencies and organizations on Monday, June 28, 2004, at 1:30 p.m., at the address below:

Clark County Government Center
Commission Chambers
500 South Grand Central Parkway
Las Vegas, Nevada 89101

Your attendance at this meeting would be appreciated, although all input provided at the meeting or in writing will be equally considered in developing the EA. A public scoping meeting will also be conducted on Monday, June 28, 2004, beginning at 6:00 p.m. at the same location. If you have any questions or concerns related to preparation of this EA, please contact Teresa Arnold at (702) 261-5706, or Jeff Jacquart at (702) 261-5510. We appreciate your assistance.

Sincerely,



RANDALL H. WALKER
Director of Aviation

RHW:lp

Enclosure

cc: Dennis W. Mewshaw
Jeffrey Jacquart
Teresa Arnold
Mike Loghides

Field Supervisor
Fish and Wildlife Service
Southern Nevada Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

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State Engineer
Division of Water Resources
123 W Nye Lane, Suite 246
Carson City, NV 89706-0818

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State Historic Preservation Officer
Department of Cultural Affairs
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Carson City, NV 89701

Mr. Kent Cooper
Assistant Director - Planning
NV DOT
1263 S. Stewart St.
Carson City, NV 89712

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Administrator
Division of Environmental Protection
NV Dept. of Conservation and Natural Resources
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Carson City, NV 89706

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Las Vegas, NV 89119

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Statewide Aviation Planning Coordinator
NV DOT
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Carson City, NV 89712

Mr. Steve Robinson
State Forester
Division of Forestry, State Headquarters
NV Dept. of Conservation and Natural Resources
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Carson City, NV 89701

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Field Office Director
US Dept. of Housing and Urban Development
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Las Vegas, NV 89106

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Southern Regional Forester
Division of Forestry, Southern Region Office
NV Dept. of Conservation and Natural Resources
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Las Vegas, NV 89108

Ms. Sharon DiPinto
Assistant Field Manager, Lands
Bureau of Land Management
4701 North Torrey Pines Drive
Las Vegas, NV 89130

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Administrator
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NV Dept. of Conservation and Natural Resources
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Reno, NV 89512

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Division Administrator, Federal-Aid Division Office
Federal Highway Administration
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Carson City, NV 89701-0602

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Department of Wildlife
NV Dept. of Conservation and Natural Resources
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Las Vegas, NV 89108

Mr. Scott Ewers
R.E.L.M. Officer
USDA Forest Service
4701 N. Torrey Pines Dr.
Las Vegas, NV 89130

Mr. Michael Turnipseed
Director
NV Dept. of Conservation and Natural Resources
123 W. Nye Lane
Carson City, NV 89706-0818

Mr. David Tomsovic or Ms. Lisa Hans
Federal Activities Office, Cross Media Division
US EPA Region 9
75 Hawthorne Street
Mail code CMD-2
San Francisco, CA 94105

Alan Schmeirer
Environmental Compliance Coordinator
Pacific West Region
National Park Service
One Jackson Center
1111 Jackson Street, Suite 700
Oakland, CA 94607

Mr. Jim Holland
NPS Planner
Lake Mead National Recreation Area
National Park Service
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Boulder City, NV 89005

Mr. James Green (LC-2600)
Compliance Group Manager
Bureau of Reclamation
U.S. Department of the Interior
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Boulder City, NV 89006-1470

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Director
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Las Vegas, NV 89155

Ms. Barbara Ginoulis
Director
Comprehensive Planning
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Las Vegas, NV 89155

Mr. Matthew LaCroix
Director 1
Real Property Management
Clark County School District
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Las Vegas, NV 89121

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Tribal Chairman
Hualapai Tribal Council
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Peach Springs, Arizona 86434

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Chairman for the **Las Vegas Paiute**
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Las Vegas, NV 89106

Kellie Gallegos
Southern Paiute Field Office, Western Region
Bureau of Indian Affairs
U.S. Department of Interiors
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St. George, Utah 84771

Camille Garibaldi
Environmental Specialist
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San Francisco Airports District Office
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Burlingame, California 94010

Art Jones
Office Manager
FAA-FSDO
Las Vegas Flight Standards District Office
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Las Vegas, NV 89119

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Manager
Bureau of Land Management
Las Vegas Field Office
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Las Vegas, NV 89130

Rae Heller
Team Leader Special Projects
Nevada Power
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Las Vegas, NV 89146

Timothy P. O'Brian
Manager, Red Rock and Sloan Canyon NCAs
Bureau of Land Management
Las Vegas Field Office
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Las Vegas, NV 89130

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State Clearinghouse, SPOC
Dept. of Administration
209 E. Musser, Rm. 200
Carson City, NV 89701

Assemblywoman Chris Giunchigliani
State of Nevada
706 Bracken Avenue
Las Vegas, NV 89104

Assemblyman David Parks
State of Nevada
1700 Gabriel Drive
Las Vegas, NV 89119-6286

Ms. Vicki Mayes
Acting City Manager
City of Boulder City
401 California Avenue
Boulder City, NV 89005

U.S. Senator Harry Reid
Lloyd George Federal Building
333 Las Vegas Boulevard South
Suite 8016
Las Vegas, Nevada 89101

Ms. Mary Kay Peck
Community Development Director
City of Henderson
240 Water St., Ste. 105
Henderson, NV 89015

Congresswoman Shelley Berkley
Representative
Las Vegas District Office
2340 Paseo Del Prado, Suite D-106
Las Vegas, Nevada 89101

Ms. Bonnie Rinaldi
Assistant City Manager
City of Henderson
240 Water Street
P.O. Box 95050
Henderson, NV 89009-5050

Congressman Jim Gibbons
Representative
600 Las Vegas Boulevard South, Suite 680
Las Vegas, Nevada 89101

Kenny Young
Acting Community Development Director
City of North Las Vegas
2266 Civic Center Drive
North Las Vegas, NV 89030

Congressman Jon Porter
Representative
2501 North Green Valley Parkway
Henderson, Nevada 89014

Margo Wheeler
Acting Director
Planning and Development
City of Las Vegas
Development Services Center
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Las Vegas, NV 89101

Commissioner Mary Kincaid-Chauncey
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Las Vegas, NV 89155

Jacob Snow
General Manager
RTC
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Las Vegas, NV 89106

Commissioner Chip Maxfield
500 Grand Central Parkway
Las Vegas, NV 89155

Commissioner Yvonne Atkinson Gates
500 Grand Central Parkway
Las Vegas, NV 89155

Commissioner Lynette Boggs McDonald
500 Grand Central Parkway
Las Vegas, NV 89155

Peter Archuleta
General Manager
Clark County Water Reclamation District
5857 E. Flamingo Road
Las Vegas, NV 89122

Commissioner Myrna Williams
500 Grand Central Parkway
Las Vegas, NV 89155

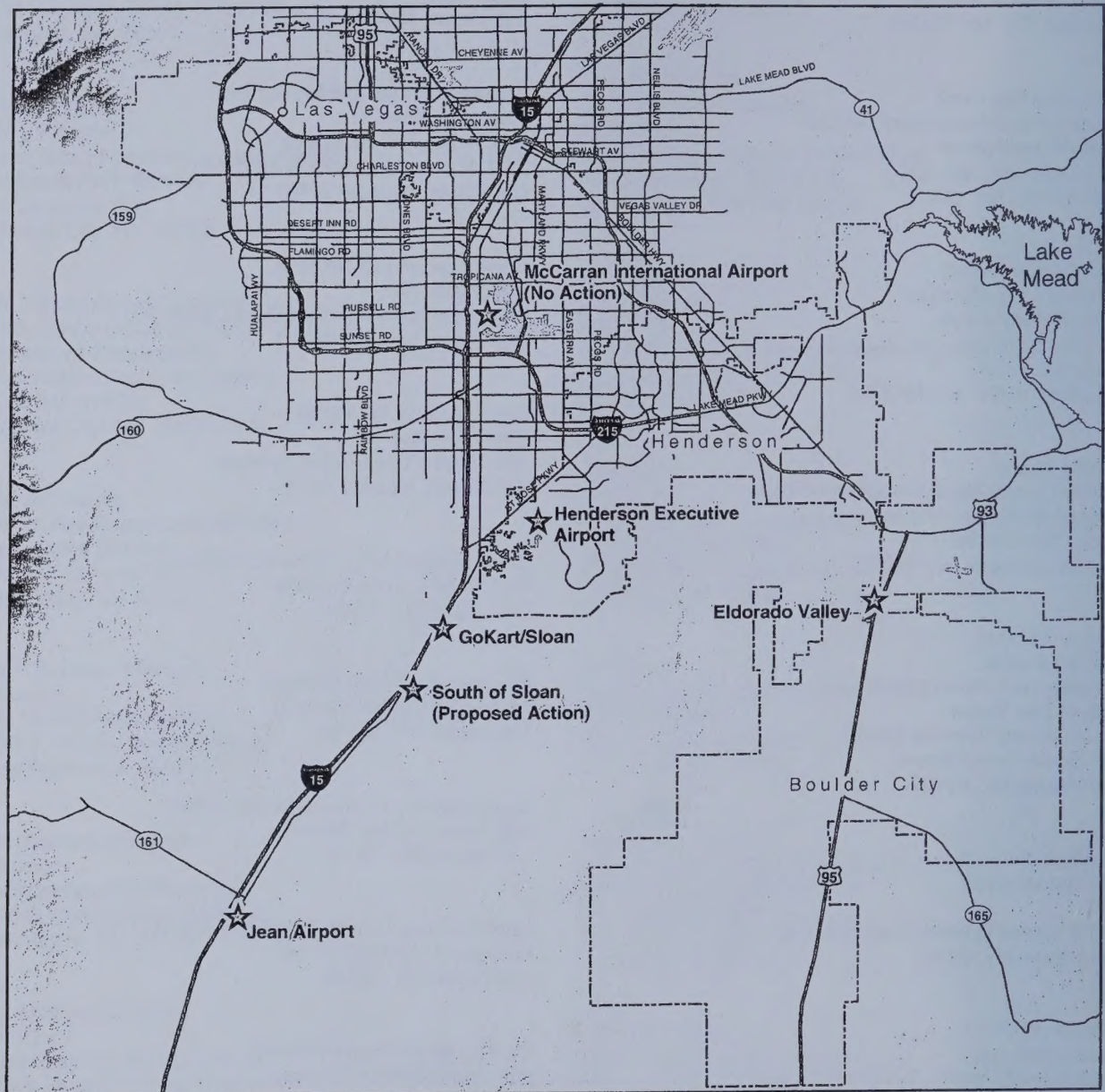
Kenny C. Guinn
Governor
State of Nevada
Capitol Building
Carson City, NV. 89701

Commissioner Rory Reid
500 Grand Central Parkway
Las Vegas, NV 89155

U.S. Senator John Ensign
Lloyd George Federal Building
333 Las Vegas Boulevard South
Suite 8203
Las Vegas, Nevada 89101

Commissioner Bruce Woodbury
500 Grand Central Parkway
Las Vegas, NV 89155

Clark County Department of Aviation



★ Candidate Heliport Site

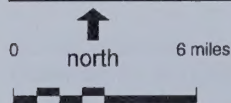
— Primary Road

— Secondary Road

--- City Boundary

Source: Clark County Department of Aviation
Prepared by: Ricondo & Associates, Inc.

Exhibit 1



Proposed Action and Alternatives

LAS VEGAS



McCARRAN INTERNATIONAL AIRPORT

Department of Aviation

RANDALL H. WALKER

DIRECTOR

ROSEMARY A. VASSILIADIS

DEPUTY DIRECTOR

POSTAL BOX 11005

LAS VEGAS, NEVADA 89111-1005

(702) 261-5211

FAX (702) 597-9553

E-MAIL: webmaster2@mccarran.com

June 7, 2004

**Notice of Public Scoping Meeting for the
Southern Nevada Regional Heliport Environmental Assessment**

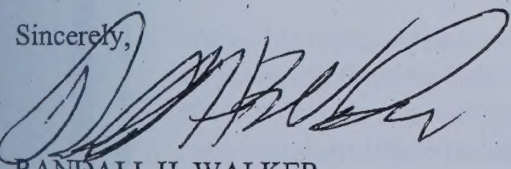
Dear Sir or Madam:

The Clark County Department of Aviation (CCDOA) is requesting public input on the scope of the environmental analysis to be conducted for the Southern Nevada Regional Heliport. On February 3, 2004, the Clark County Board of Commissioners (BCC) designated a preferred non-urban heliport site for commercial helicopter operations approximately 2 to 5 miles south of Interstate 15 and the Sloan Interchange (referred to as the South of Sloan site). The BCC retained the GoKart/Sloan site (Assessor Parcel No. 191-30-601-001) as an alternative should acquisition of the South of Sloan site be either significantly delayed (the acquisition will require Congressional action which needs to be completed by mid-2005) or be burdened with conditions that would delay development of the heliport at the preferred South of Sloan site (the facility needs to be operational as expeditiously as possible, with a target date of not later than 2008). The proposed build alternative for the Environmental Assessment (EA) is the South of Sloan site. Four build alternatives to the proposed action, including the GoKart/Sloan site, and one no action alternative, will also be reviewed in the EA. The Southern Nevada Regional Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflowed by commercial helicopters providing tours of the Grand Canyon and the Las Vegas Strip.

A Public Scoping meeting to accept comment on conditions, studies, plans, or considerations that may be relevant to determining the potential environmental impacts of this project, will be held by the CCDOA on Monday, June 28, 2004, at 6:00 p.m. in the County Commission Chambers, 500 S. Grand Central Parkway, Las Vegas, NV.

Written comments will be accepted through August 2, 2004. Please address any comments to: Teresa Arnold, Planning Division, McCarran International Airport, P.O. Box 11005, Las Vegas, NV 89111-1005, or to ccdoaheliportescoping@mccarran.com. Any questions or concerns related to the preparation of the EA should be directed to either Teresa Arnold, at (702) 261-5706, or Jeffrey M. Jacquart, at (702) 261-5510.

Sincerely,


 RANDALL H. WALKER
 Director of Aviation

RHW:lp

 cc: Dennis Mewshaw
 Mike Loghides

 Teresa Arnold
 Jeffrey Jacquart


Clark County Board of Commissioners

 Mary Kincaid-Chauncey, Chair • Chip Maxfield, Vice-Chairman
 Yvonne Atkinson Gates • Mark A. James • Rory Reid • Myrna Williams • Bruce Woodbury

Distribution:

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Advisory Committee on Helicopter Noise
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McCarran International Airport
Planning Division
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Las Vegas, NV 89111-1005

Helicopter Association International
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Director of Heliports and Technical Programs
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Alexandria, VA 22314

Sierra Club
c/o Jane Feldman
Conservation Chair, local group
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Las Vegas, NV 89102

Friends of Sloan Canyon
c/o Bill James
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Las Vegas, NV 89123

Friends of Nevada Wilderness
c/o Susan Potts
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Las Vegas, NV 89109

Redrock Audubon
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SHOUT
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Vice President
Del Webb, Planning and Development
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Diane M. Booker
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Vice President & General Manager
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CEO
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Las Vegas, NV 89119

Gerald J. Shlesinger
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Las Vegas Helicopters
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Las Vegas, NV 89109

Gerry Airola
Silver State Helicopters
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North Las Vegas, NV 89032



McCarran
INTERNATIONAL AIRPORT

**Notice of Public Scoping Meeting
for the Southern Nevada Regional Heliport
Environmental Assessment**

The Clark County Department of Aviation (CCDOA) is requesting public input on the scope of the environmental analysis to be conducted for the Southern Nevada Regional Heliport. On February 3, 2004, the Board of County Commissioners (BCC) designated a preferred non-urban heliport site for commercial helicopter operations approximately 2 to 5 miles south of Interstate 15 and the Sloan Interchange (referred to as the South of Sloan site). The BCC retained the GoKart/Sloan site (Assessor Parcel No. 191-30-601-001) as an alternative should acquisition of the South of Sloan site be either significantly delayed (the acquisition will require Congressional action which needs to be completed by mid-2005) or be burdened with conditions that would delay development of the heliport at the preferred South of Sloan site (the facility needs to be operational as expeditiously as possible, with a target date of not later than 2008). The proposed build alternative for the Environmental Assessment (EA) is the South of Sloan site. Four build alternatives to the proposed action, including the GoKart/Sloan site, and one no action alternative, will also be reviewed in the EA. The Southern Nevada Regional Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflowed by commercial helicopters providing tours of the Grand Canyon and the Las Vegas Strip.

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Written comments will be accepted through August 2, 2004. Please address any comments to: Teresa Arnold, Planning Division, McCarran International Airport, P.O. Box 11005, Las Vegas, NV 89111-1005, or to ccdoaheliportscoping@mccarran.com. Any questions or concerns related to the preparation of the EA should be directed to either Teresa Arnold, at (702) 261-5706, or Jeffrey M. Jacquart, at (702) 261-5510.

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**NOTICE
OF
PUBLIC SCOPING
MEETING
for the Southern
Nevada Regional
Heliport
Environmental
Assessment**

The Clark County Department of Aviation (CCDOA) is requesting public input on the scope of the environmental analysis to be conducted for the Southern Nevada Regional Heliport. On February 3, 2004, the Clark County Board of Commissioners (BCC) designated a preferred non-urban heliport site for commercial helicopter operations, approximately 2.5 miles south of Interstate 15 and the Sloan interchange (referred to as the South of Sloan site). The BCC retained the GoKart/Sloan site (Assessor's Parcel No. 191-30-601-001) as an alternative should acquisition of the South of Sloan site be either significantly delayed (the acquisition will require Congressional action which needs to be completed by mid-2005) or be burdened with conditions that would delay development of the heliport at the preferred South of Sloan site (the facility needs to be operational as expeditiously as possible with a target date of not later than 2008). The proposed build alternative for the Environmental Assessment (EA) is the South of Sloan site. Four build alternatives to the proposed action, including the GoKart/Sloan site, and one no action alternative, will also be reviewed in the EA. The Southern Nevada Regional Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflowed by commercial helicopters providing tours of the Grand Canyon and the Las Vegas Strip.

A Public Scoping meeting to accept comment on conditions, studies, plans, or considerations that may be relevant to determining the potential environmental impacts of this project, will be held by the CCDOA on Monday, June 28, 2004, at 6:00 p.m. in the County Commission Chambers, 500 S. Grand Central Parkway, Las Vegas, NV.

Written comments will be accepted through August 2, 2004. Please address any comments to: Teresa Arnold, Planning Division, McCarran International Airport, P.O. Box 11005, Las Vegas, NV 89111-1005, or to

ccdoaheliportscoping@mccarran.com. Any questions or concerns related to the preparation of the EA should be directed to either Teresa Arnold, at (702) 261-5706, or Jeffrey M. Jacquart, at (702) 261-5510. PUB: June 13, 20, 27, 2004 LV Review-Journal&Sun

AFFP DISTRICT COURT
Clark County, Nevada

AFFIDAVIT OF PUBLICATION

STATE OF NEVADA)
COUNTY OF CLARK)

SS:

Donna Stark, being 1st duly sworn, deposes and says:

That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for,

CC DEPT AVIATION
3408564

2615211CC

was continuously published in said Las Vegas Review Journal and/or Las Vegas Sun in 3 edition(s) of said newspaper issued from 06/13/2004 to 06/27/2004, on the following days: JUNE 13, 20, 27, 2004

Signed: _____

Donna Stark

SUBSCRIBED AND SWORN BEFORE ME THIS THE _____

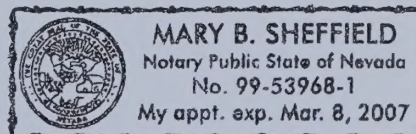
29

day of _____ 2004

June

Notary Public

Mary B. Sheffield



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LAS VEGAS



McCARRAN INTERNATIONAL AIRPORT

Department of Aviation

RANDALL H. WALKER

DIRECTOR

ROSEMARY A. VASSILIADIS

DEPUTY DIRECTOR

POSTAL BOX 11005

LAS VEGAS, NEVADA 89111-1005

(702) 261-5211

FAX (702) 597-9553

E-MAIL: webmaster2@mccarran.com

June 23, 2004

**Southern Nevada Regional Heliport Open House
for the Seven Hills/Westgate and Anthem areas**

Dear Sir or Madam:

On February 3, 2004, the Clark County Board of Commissioners (BOCC) designated a preferred non-urban heliport site for commercial helicopter operations approximately 2 to 5 miles south of Interstate 15 and the Sloan Interchange (referred to as the South of Sloan site). The BOCC retained the GoKart/Sloan site (Assessor Parcel No. 191-30-601-001) as an alternative should acquisition of the South of Sloan site be either significantly delayed (the acquisition will require Congressional action which needs to be completed by mid-2005) or be burdened with conditions that would delay development of the heliport at the preferred South of Sloan site (the facility needs to be operational as expeditiously as possible, with a target date of not later than 2008). In addition to these two locations, three other alternatives to the preferred action are being studied and a no action alternative (continuing operations at McCarran International Airport) will also be evaluated. The Southern Nevada Regional Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflown by commercial helicopters providing tours of the Grand Canyon and the Las Vegas Strip.

An Open House will be held for the Seven Hills/Westgate and Anthem areas on Thursday, July 15, 2004, at 6:30 p.m. at Elise L. Wolff Elementary School, 1001 Seven Hills Drive, Henderson, NV. No formal presentation will be made during the Open House; rather, the Clark County Department of Aviation staff representatives will informally review the project's scope and discuss the environmental review process with interested residents.

Questions or comments related to the Southern Nevada Regional Heliport should be directed to either Teresa Arnold, at (702) 261-5706, or Jeffrey M. Jacquart, at (702) 261-5510.

Sincerely,

RANDALL H. WALKER

Director of Aviation

RHW:lp

cc: Commissioner Woodbury
Dennis Mewshaw
Teresa Arnold
Mike Loghides
Jeffrey Jacquart



Clark County Board of Commissioners

Mary Kincaid-Chauncey, Chair • Chip Maxfield, Vice-Chairman
Yvonne Atkinson Gates • Mark A. James • Rory Reid • Myrna Williams • Bruce Woodbury

Sir or Madam
June 23, 2004
Page 2

Distribution:

Anthem Country Club Community Assn., Inc.
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Henderson, NV 89052

Coventry Homes at Anthem Community Assn., Inc.
ACM
Leslie White
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Las Vegas, NV 89118

Sun City Anthem Community Assn., Inc.
CSC Services of Nevada, Inc.
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Excellence Community Mgmt.
601 Whitney Ranch, B-10
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Chenango at Southfork Owners Assn.
Raven Management Inc.
3663 E. Sunset Rd., Ste. 102
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Excellence Community Mgmt.
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The Estates at Seven Hills Owners Assn.
Real Properties Management Group
3087 E. Warm Springs, #100
Henderson, NV 89120

Granite Hills Owners Association
Camco
Susan Gerard
1830 E. Sahara Ave., Ste. 313
Las Vegas, NV 89104

Majestic Hills Community Association
Terra West Property Mgmt.
Katherine D. Matheson
2655 Rainbow Blvd., #200
Las Vegas NV 89146

Palatine Hill Community Association
Trish Hall
3068 E. Sunset Rd., #14
Las Vegas, NV 89120

Palermo Homeowners Association
Excellence Community Mgmt.
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Henderson, NV 89014

Palermo West HOA
American Family real Estate
1700 W. Horizon Ridge, # 204
Henderson, NV 89012

Benchmark Properties
Ellen Rosenbaum
1515 E. Tropicana, # 350A
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Seven Hills Master Community Association
Excellence Community Mgmt.
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Henderson, NV 89014

Southfork Homeowners Association
Lawrence J. Semenza
3027 E. Sunset Rd.
Las Vegas, NV 89120

The Terraces Homeowners Association
Castle Management
Diane R. Wild
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Las Vegas, NV 89147

City of Henderson
Neighborhood Services Division
Skeet Fitzgerald
240 Water Street
Henderson, NV 89009-5050

City of Henderson
Neighborhood Services Division
Tiffany I. Jackson
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SHOUT
SCACA, Inc.
2450 Hampton Rd.
Henderson, NV 89052

Favil West
2831 Scotts Valley Dr.
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LAS VEGAS



McCARRAN INTERNATIONAL AIRPORT

Department of Aviation

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October 25, 2004

**NOTICE OF INTENT TO ADD A BUILD ALTERNATIVE FOR THE ENVIRONMENTAL
ASSESSMENT FOR A SOUTHERN NEVADA REGIONAL HELIPORT**

Dear Sir or Madam:

On June 7, 2004, the Clark County Department of Aviation (CCDOA) informed you that public input was being requested on the scope of the environmental analysis being conducted for the Southern Nevada Regional Heliport. The purpose of this letter is to inform you that a fifth build alternative will be added to the scope of the Heliport Environmental Assessment (EA). The fifth build alternative will include a location on the closed Sunrise Landfill. The exact site, expected to be finalized once a neighborhood meeting is held, will likely be within a 160-acre parcel located in the southeast corner of Township 21 South, Range 62 East, Section 12.

As stated in the June 7, 2004 correspondence, the proposed action is to construct and operate the Southern Nevada Regional Heliport on the South of Sloan site. The South of Sloan site is currently owned by the U.S. Department of the Interior, Bureau of Land Management, will require federal legislation providing for the transfer of this site to Clark County for construction and operation of the Southern Nevada Regional Heliport.

Originally, the CCDOA identified four build alternatives to the proposed action, as well as a no action alternative in which commercial helicopter operations would remain based at McCarran International Airport. The revised list of alternatives, including the Sunrise Landfill site, are depicted on Exhibit 1, and include: South of Sloan (Proposed Action), GoKart/Sloan, Henderson Executive Airport, Jean Airport, Eldorado Valley, Sunrise Landfill, and McCarran International Airport (no action alternative)

Please review the Sunrise Landfill site described above and inform us in writing by Friday, December 17, 2004, of any conditions, studies, plans, or considerations that you believe may be relevant to determining the potential environmental impacts of this project. A public meeting regarding the addition of the Sunrise Landfill alternative is tentatively scheduled to be held with the Sunrise Manor Town Advisory Board on Thursday, December 2, 2004, at 7:00 p.m., Hollywood Recreation and Community Center, 1650 S. Hollywood, Las Vegas, NV 89110.

Written comments will be accepted through Friday, December 17, 2004. Please address any comments to: Teresa Arnold, Planning Division, McCarran International Airport, P.O. Box 11005, Las Vegas, NV 89111-1005. Any questions or concerns related to the preparation of the EA should be directed to either Teresa Arnold, at (702) 261-5706, or Jeffrey M. Jacquart, at (702) 261-5510.

The Southern Nevada Regional Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflown by commercial helicopters providing tours of the Grand Canyon and the Las Vegas Strip.

Sincerely,

RANDALL H. WALKER

Director of Aviation

RHW:mmm

cc: Dennis Mewshaw
Mike Loghides

Teresa Arnold
Jeffrey Jacquart



Clark County Board of Commissioners

Mary Kincaid-Chauncey, Chair • Chip Maxfield, Vice-Chairman
Yvonne Atkinson Gates • Mark A. James • Rory Reid • Myrna Williams • Bruce Woodbury

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President
Nevada Environmental Coalition, Inc.
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Mr. Ben Contine
Advisory Committee on Helicopter Noise
c/o Jeff Jacquart
McCarran International Airport
Planning Division
P.O. Box 11005
Las Vegas, NV 89111-1005

Helicopter Association International
c/o Harold Summers
Director of Heliports and Technical Programs
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Sierra Club
c/o Jane Feldman
Conservation Chair, local group
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Las Vegas, NV 89102

Friends of Sloan Canyon
c/o Bill James
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Las Vegas, NV 89123
(702) 361-6854

Friends of Nevada Wilderness
c/o Susan Potts
1700 East Desert Inn #406
Las Vegas, NV 89109
(702) 650-6542

Redrock Audubon
c/o John and Herme Hiatt
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Las Vegas, NV 89123
(702) 361-1171

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Friends of Sloan Canyon
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Tom Hennessy
Vice President
Del Webb, Planning and Development
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Vice President & General Manager
Papillon Grand Canyon Helicopters
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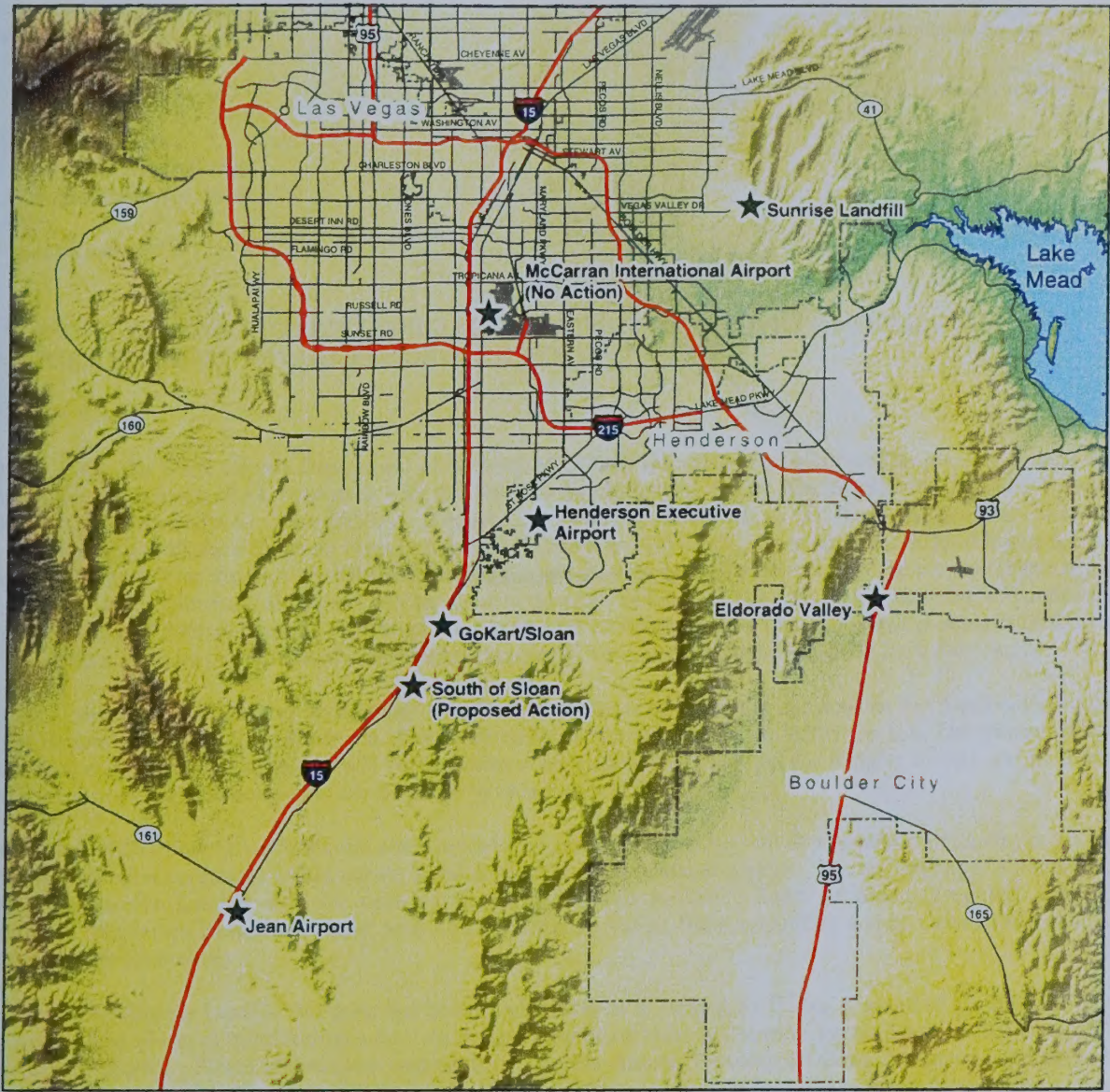
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CEO
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Las Vegas Helicopters
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Las Vegas, NV 89109
(702) 736-0013

Gerry Airola
Silver State Helicopters
2722 Perimeter Road, Suite 207
North Las Vegas, NV 89032

Clark County Department of Aviation



★ Candidate Heliport Site

- Primary Road
- Secondary Road
- - - City Boundary

Source: Clark County Department of Aviation
Prepared by: Ricondo & Associates, Inc.

Exhibit 1



Proposed Action and Revised Alternatives

Notice of Intent to Prepare an EA for a
Southern Nevada Regional Heliport

October 2004

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LAS VEGAS



McCARRAN INTERNATIONAL AIRPORT
October 25, 2004

Department of Aviation

RANDALL H. WALKER

DIRECTOR

ROSEMARY A. VASSILIADIS

DEPUTY DIRECTOR

POSTAL BOX 11005
LAS VEGAS, NEVADA 89111-1005
(702) 261-5211
FAX (702) 597-9553
E-MAIL: webmaster2@mccarran.com

U.S. Senator Harry Reid
Lloyd George Federal Building
333 Las Vegas Boulevard South
Suite 8016
Las Vegas, Nevada 89101

Re: NOTICE OF INTENT TO ADD A BUILD ALTERNATIVE FOR THE ENVIRONMENTAL ASSESSMENT
FOR A SOUTHERN NEVADA REGIONAL HELIPORT

Dear Senator Reid:

On June 7, 2004, the Clark County Department of Aviation (CCDOA) informed your agency of its plans to prepare an Environmental Assessment (EA), consistent with the National Environmental Policy Act of 1969 (NEPA) and Federal Aviation Administration (FAA) Order 5050.4A, *Airport Environmental Handbook*, to (1) obtain the necessary federal, State, and local approvals for a Southern Nevada Regional Heliport, and (2) be eligible to apply for Airport Improvement Program (AIP) grants from the FAA to assist in financing the proposed design and construction. The purpose of this letter is to inform you that a fifth build alternative will be added to the scope of the EA. The fifth build alternative will include a location on the closed Sunrise Landfill. The exact site, expected to be finalized once a neighborhood meeting is held, will likely be within a 160-acre parcel located in the southeast corner of Township 21 South, Range 62 East, Section 12.

As stated in the June 7, 2004 correspondence, the proposed action is to construct and operate the Southern Nevada Regional Heliport on the South of Sloan site. The South of Sloan site is currently owned by the U.S. Department of the Interior, Bureau of Land Management, will require federal legislation providing for the transfer of this site to Clark County for construction and operation of the Southern Nevada Regional Heliport.

Originally, the CCDOA identified four build alternatives to the proposed action, as well as a no action alternative in which commercial helicopter operations would remain based at McCarran International Airport. The revised list of alternatives, including the Sunrise Landfill site, are depicted on Exhibit 1, and include: South of Sloan (Proposed Action), GoKart/Sloan, Henderson Executive Airport, Jean Airport, Eldorado Valley, Sunrise Landfill, and McCarran International Airport (no action alternative)

Please review the Sunrise Landfill site described above and inform us in writing by Friday, December 17, 2004, of any conditions, studies, plans, or considerations that you believe may be relevant to determining the potential environmental impacts of this project. Please address any comments to: Teresa Arnold, Planning Division, McCarran International Airport, P.O. Box 11005, Las Vegas, NV 89111-1005. If you have any questions or concerns related to preparation of this EA, please contact Teresa Arnold at (702) 261-5706, or Jeff Jacquart at (702) 261-5510. We appreciate your assistance.

Sincerely,

RANDALL H. WALKER
Director of Aviation

RHW:mm

Enclosure

cc: Dennis W. Mewshaw
Teresa Arnold

Jeffrey Jacquart
Mike Loghides



Clark County Board of Commissioners

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Yvonne Atkinson Gates • Mark A. James • Rory Reid • Myrna Williams • Bruce Woodbury

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Fish and Wildlife Service
Southern Nevada Field Office
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Division of Environmental Protection
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Mr. John Jones
Southern Regional Forester
Division of Forestry, Southern Region Office
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State Engineer
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Assistant Director - Planning
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NPS Planner
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U.S. Department of the Interior
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Ms. Barbara Ginoulas
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Bureau of Indian Affairs
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State of Nevada
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Las Vegas, NV 89104

Assemblyman David Parks
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Acting City Manager
City of Boulder City
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Congresswoman Shelley Berkley
Representative
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Congressman Jim Gibbons
Representative
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Las Vegas, Nevada 89101

Congressman Jon Porter
Representative
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Henderson, Nevada 89014

Commissioner Mary Kincaid-Chauncey
500 Grand Central Parkway
Las Vegas, NV 89155

Commissioner Chip Maxfield
500 Grand Central Parkway
Las Vegas, NV 89155

Commissioner Yvonne Atkinson Gates
500 Grand Central Parkway
Las Vegas, NV 89155

Commissioner Lynette Boggs McDonald
500 Grand Central Parkway
Las Vegas, NV 89155

Commissioner Myrna Williams
500 Grand Central Parkway
Las Vegas, NV 89155

Commissioner Rory Reid
500 Grand Central Parkway
Las Vegas, NV 89155

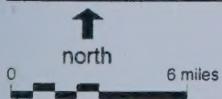
Commissioner Bruce Woodbury
500 Grand Central Parkway
Las Vegas, NV 89155



- ★ Candidate Heliport Site
- Primary Road
- Secondary Road
- - - City Boundary

Source: Clark County Department of Aviation
 Prepared by: Ricondo & Associates, Inc.

Exhibit 1



Proposed Action and Revised Alternatives

Notice of Intent to Prepare an EA for a
 Southern Nevada Regional Heliport

October 2004

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G.3 Scoping Comments Summaries

As discussed in Section G.1, federal and State agencies, interested parties, and individuals were informed of the preparation of an EA for a Southern Nevada Regional Heliport, the subsequent addition of an alternative to the EA, the scoping meetings, and the comment periods. Through the scoping process, the CCDOA requested input as to the extent and type of environmental analyses that could be accomplished in the environmental study for this project.

G.3.1 Comments Received on the Site Suitability Study

In addition to anticipated scoping comments, the CCDOA considered all comments received on the Site Suitability Assessment to be indicative of the public's concerns relative to a new non-urban heliport. These 946 comments were reviewed as though they were scoping comments in order to determine issues that could be appropriately addressed in this EA. A summary of this review is included as **Exhibit G-1**.

G.3.2 Comments Received during Scoping Period

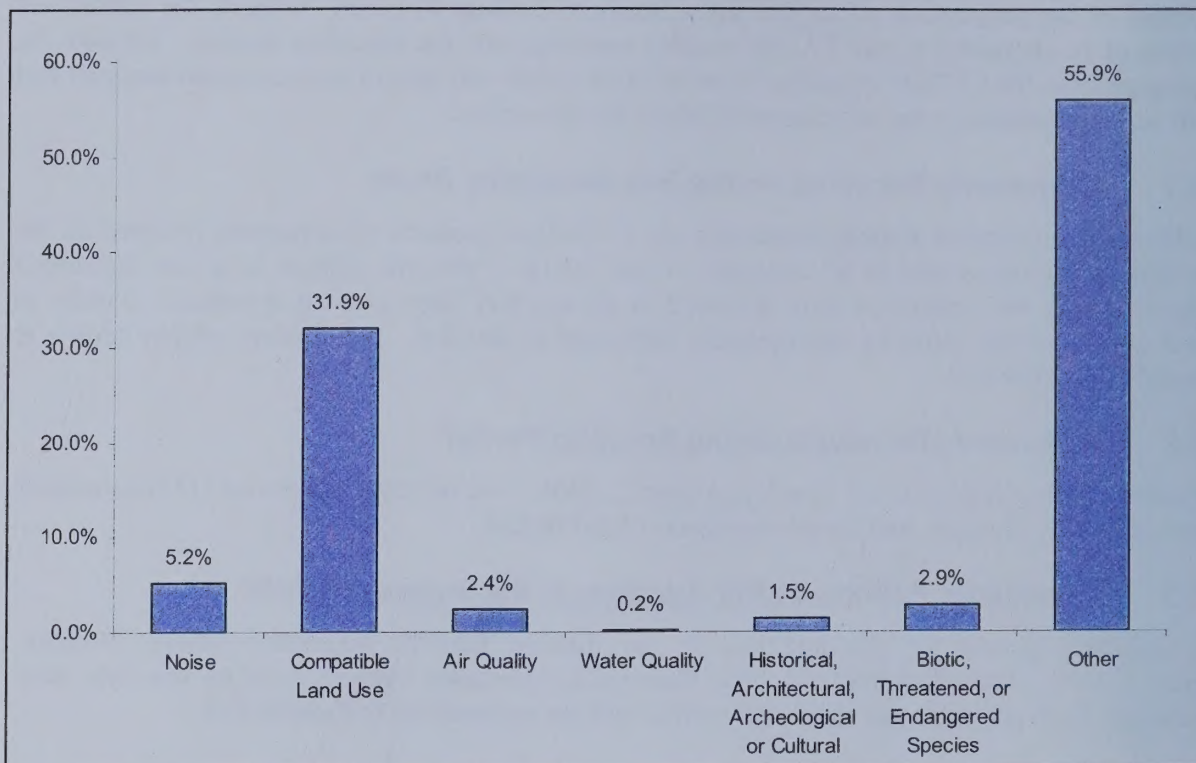
The initial scoping period closed Monday, August 2, 2004. One hundred and twelve (112) comments were received by this date, and are summarized in **Exhibit G-2**.

G.3.3 Comments Received after Addition of the Sunrise Landfill

The comment period for the addition of the Sunrise Landfill alternative closed Monday, January 3, 2005. Three hundred and thirty three (333) comments were received by this date from individuals, agencies, and other interested parties, and are summarized in **Exhibit G-3**.

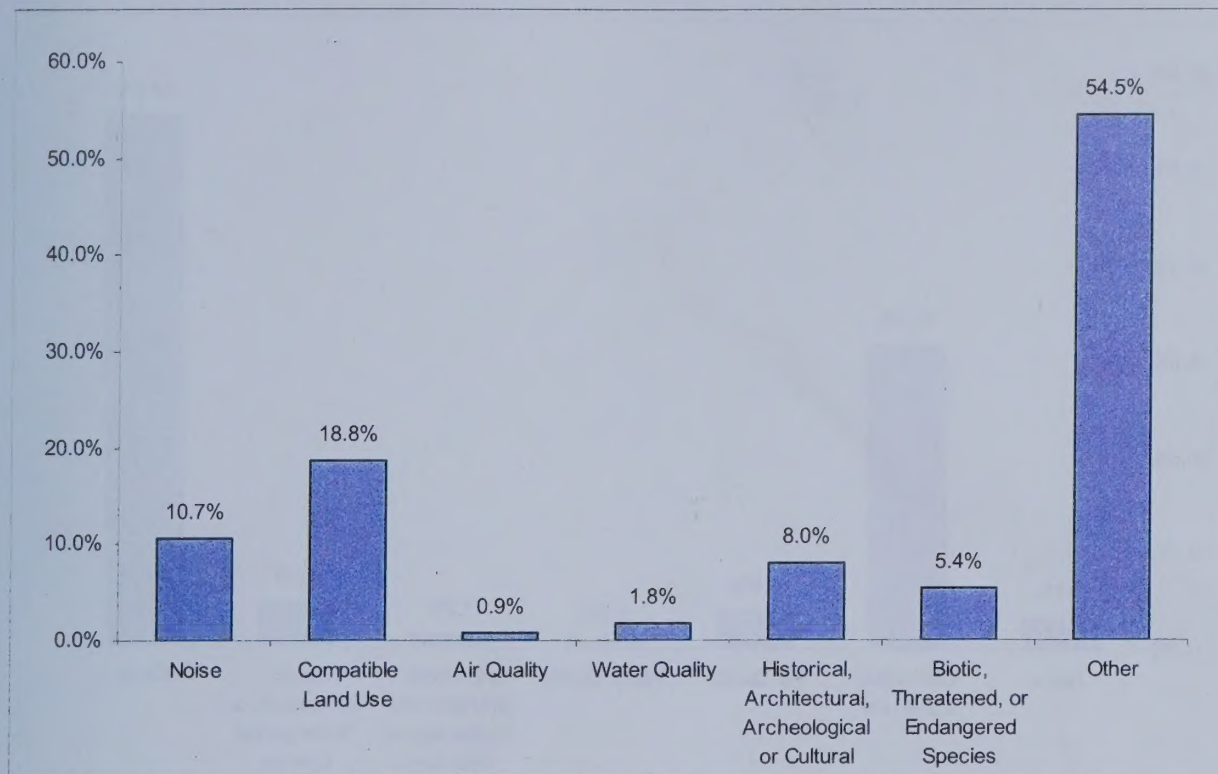
Exhibit G-1

Summary of comments received during SSA



Summary of "Other" Comments

Site preference	23.1%
Safety of site	21.7%
Environmental justice	13.6%
Induced socioeconomic impacts	9.5%
Health impacts	6.6%
"Non-urban" site requirements per NRS 495	5.3%
Section 4(f)	4.2%
Surface transportation	4.2%
Public involvement	1.3%
Solid and hazardous waste	0.9%
Forecast	0.8%
Mitigation measures	0.8%
Cumulative impacts	0.6%
Visual impacts	0.6%
Compatibility with other plans	0.4%
Miscellaneous	6.6%

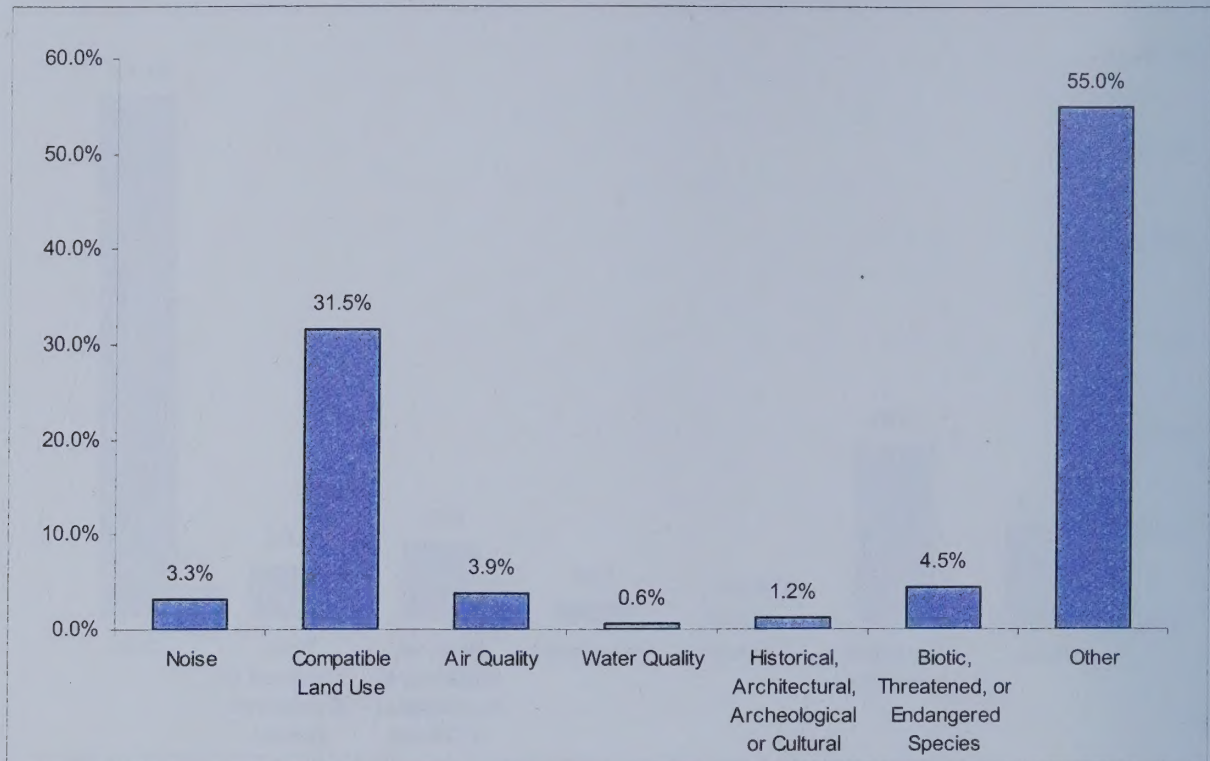
Exhibit G-2**Summary of EA scoping comments received****Summary of "Other" Comments**

Section 4(f)	18.0%
Surface transportation	13.1%
Apply NEPA mandates to selection process	8.2%
Site preference	8.2%
Safety of site	6.6%
Cumulative impacts	6.6%
Environmental justice	6.6%
Socioeconomic impacts	6.6%
Solid and hazardous waste	6.6%
Availability of utilities	4.9%
Forecast	3.3%
Energy supply and natural resources	1.6%
Miscellaneous	9.8%

Prepared by: Ricondo & Associates, Inc., April 2008.

Exhibit G-3

Summary of scoping comments (addition of SUN)



Summary of "Other" Comments

Surface transportation	32.2%
Environmental justice	10.4%
Safety of site	9.3%
Socioeconomic impacts	6.6%
Section 4(f)	6.0%
EPA guidelines for landfill redevelopment	4.9%
Site preference	4.9%
"Non-urban" site requirements per NRS 495	3.3%
Health impacts	2.7%
Availability of utilities	1.6%
Ground travel times	1.6%
Fault lines	1.1%
Compatibility with other plans	1.1%
Mitigation measures	1.1%
Solid and hazardous waste	1.1%

Appendix H. Cultural Resources Consultation and Tribal Coordination

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Appendix H. Cultural Resources Consultation and Tribal Coordination

Appendix H documents the agency coordination conducted with the Department of Cultural Affairs, Nevada State Historic Preservation Office (SHPO) and Native American tribes and bands, as required by Section 106 of the *National Historic Preservation Act of 1966*, during the preparation of the EA for the construction and operation of a Southern Nevada Regional Heliport.

H.1 Nevada State Historic Preservation Office Correspondence

Attachment H-1 is a copy of the letter sent to the Department of Cultural Affairs, Nevada State Historic Preservation Office requesting them to concur with an earlier FAA determination of a not likely to adversely affect historic, archaeological, architectural, and cultural resources. **Attachment H-2** is a copy of SHPO's initial response indicating that they did not concur with FAA's determination at that time. In response to SHPO's concerns, the FAA has completed consultation with Native American Tribes and Bands (see Section H.1.1) and has provided the requested information regarding overflights to SHPO. The FAA has again made the determination of a not likely to adversely affect historic, archaeological, architectural, and cultural resources based upon subsequent consultations with the Native American Tribes and Bands, additional noise analyses presented in Section 4.7.2.3, and upon additional information presented in the cultural report entitled *a Cultural Resource Inventory of Two Alternative Southern Nevada Regional Heliport Utility Corridors, Clark County, Nevada*, that was prepared for the Proposed Heliport site and sent to the SHPO. The FAA has determined the proposed undertaking would not adversely affect any properties listed or eligible for listing on the National Register of Historic Places. On May 13, 2008, the SHPO concurred with the FAA's determination that the proposed undertaking would not adversely affect historic properties "with the avoidance and monitoring requirements outlined". A copy of the SHPO's finding is provided as **Attachment H-3**.

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U.S Department
of Transportation
Federal Aviation Administration

San Francisco Airports District Office
831 Mitten Road, Room 210
Burlingame, California 94010

March 18, 2005

Mr. Ronald M. James
State Historic Preservation Officer
Office of Historic Preservation
100 North Stewart Street
Carson City, NV 89701-4285

**Section 106 Consultation for the Proposed Southern Nevada Regional Heliport
Development in, Clark County, Nevada**

Dear Mr. James;

The Federal Aviation Administration (FAA) is the lead federal agency responsible for an environmental determination in accordance with the National Environmental Policy Act (NEPA) for proposed Southern Nevada Regional Heliport (SNRH) development in Clark County, Nevada. The FAA has federal oversight for the implementation of the proposed improvements. All existing and proposed development must be depicted on an approved Airport Layout Plan (ALP).

Pursuant to implementation of Section 106 of the National Historic Preservation Act of 1966, as amended August 2004, the FAA in accordance with 36 CFR 800, has determined that the federal undertaking is for an ALP approval and federal funding for the proposed SNRH. Enclosure (1) investigates six potential locations to develop the proposed SNRH.

The conclusion of enclosure (1) was that there were a lack of cultural resources found during the archaeological reconnaissance and any of the six locations would be suitable for development as a SNRH. The FAA requests your concurrence of a not likely to adversely effect determination.

CONCURRENCES
ROUTING SYMBOL 6/4
INITIALS/SIGNATURE BF
DATE 3/18/05
ROUTING SYMBOL 600
INITIALS/SIGNATURE (u)
DATE 3/18/2005
ROUTING SYMBOL
INITIALS/SIGNATURE
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**Section 106 Consultation for the Proposed Southern Nevada Regional Heliport
Development in, Clark County, Nevada**

If you have any further questions or comments regarding this project, please contact Mr. Barry Franklin at (650) 876-2778 ext. 614.

Kindest Regards,

**ORIGINAL SIGNED BY
ANDREW M. RICHARDS**

Andrew M. Richards
Manager, Airports District Office

Enclosures: (1) Draft Archaeological Investigation of Six Locations for the Southern
Nevada Regional Heliport Project, Las Vegas, Nevada

cc: Clark County Department of Aviation, Jeffrey M. Jacquart (w/o enclosure)
Ricondo & Associates, John C. Williams (w/o enclosure)

File: McCarran, Clark County, NV
WP: Z:\ClarkCounty_Heliport_Shp0.doc
SFO-614:B.Franklin:BF: (650) 876-2795: 3/18/2005

CONCURRENCES
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520.110

Attachment H-2 (Page 1 of 2)



STATE OF NEVADA
DEPARTMENT OF CULTURAL AFFAIRS

Nevada State Historic Preservation Office

100 N. Stewart Street

Carson City, Nevada 89701

(775) 684-3448 • Fax (775) 684-3442

www.nvshpo.org

RONALD M. JAMES
State Historic Preservation Officer

KENNY C. GUINN
Governor

SCOTT K. SISCO
Interim Director

April 22, 2005

Andrew M. Richards
Manager, Airports District Office
Federal Aviation Administration
San Francisco Airport District Office
831 Mitten Road Room 210
Burlingame CA 94010

Post-it® Fax Note 7871		Date 5/22	# of pages 4
To D. Kessler	From R. Palmer		
Co./Dept. FAA	Co. NV SHPO		
Phone # 3	Phone # 775-684-3443		
Fax #	Fax # 775-684-3442		

RE: Southern Nevada Regional Heliport Development, Clark County.

Dear Mr. Richards:

The Nevada State Historic Preservation Office (SHPO) reviewed the proposed undertaking. The SHPO concurs with the Federal Aviation Administration's determination that the cultural resources inventory submitted for our review is adequate to identify archaeological and architectural resources that could be affected by the undertaking. The SHPO does not recommend any additional archaeological inventories of the project areas.

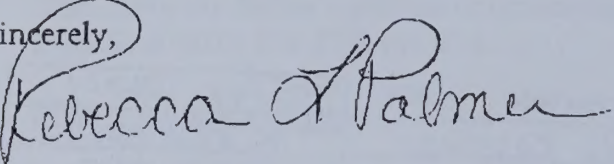
The SHPO cannot concur with the Federal Aviation Administration's determination that the proposed undertaking will not pose an effect to historic properties as the federal agency has not included any discussion of their consultation with affected Native American representatives to identify properties of religious or cultural significance that could be affected by the undertaking.

In addition, in our letter of August 30, 2004 to Ms. Teresa Arnold, this office stated that four of the proposed alternatives (Jean Airport, South of Sloan, GoKart/Sloan, and Henderson Executive Airport) could result in a flight path over the Sloan Canyon NCA. This newly-created conservation area contains numerous significant and National Register-listed historic properties that could be adversely affected by helicopter flight traffic. All future analysis of cultural resources should take these possible noise impacts into consideration. What audible impact will the placement of this heliport have on these National Register properties?

Attachment H-2 (Page 2 of 2)

Mr. Andrew M. Richards
April 22, 2005
Page 2 of 2

If you have any questions concerning this correspondence, please contact me by phone at (775) 684-3443 or by E-mail at rlpalmer@clan.lib.nv.us.

Sincerely,


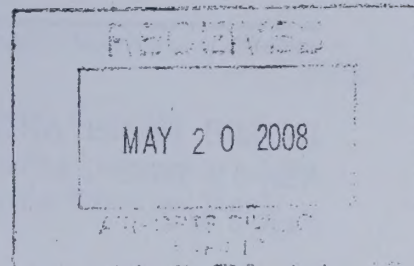
Rebecca Lynn Palmer
Historic Preservation Specialist



JIM GIBBONS
Governor

MICHAEL E. FISCHER
Department Director

STATE OF NEVADA
DEPARTMENT OF CULTURAL AFFAIRS
State Historic Preservation Office
100 N. Stewart Street
Carson City, Nevada 89701
(775) 684-3448 • Fax (775) 684-3442
www.nvshpo.org



RONALD M. JAMES
State Historic Preservation Officer

May 13, 2008

David B. Kessler, AICP
Regional Environmental Protection Specialist
U.S. Federal Aviation Administration
Western-Pacific Region
Airports Division
PO Box 92007
Los Angeles CA 90009-2007

RE: Southern Nevada Regional Heliport, Clark County.

Dear Mr. Kessler:

The Nevada State Historic Preservation Office (SHPO) reviewed the additional information for the subject undertaking. The SHPO concurs with the U.S. Federal Aviation Administration's determination that the following sites are not eligible for the National Register of Historic Places under any of the Secretary's criteria:

26Ck3816	26Ck7629	26Ck7630	26Ck7631
26Ck7632	26Ck7633	26Ck7634	26Ck7635
26Ck7636	26Ck7637	26Ck7638	26Ck7850
26Ck7851	26Ck7852		

The SHPO concurs with the U.S. Federal Aviation Administration's determination that the following historic property is eligible for the National Register under criteria a and d:

26Ck7849.

David B. Kessler, AICP
May 13, 2008
Page 2 of 2

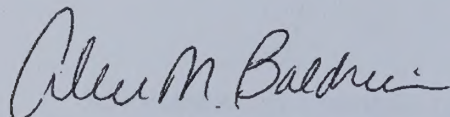
The U.S. Federal Aviation Administration identified the following historic properties in the area of potential effect for the subject undertaking:

26Ck4925 and 26Ck4958.

The SHPO concurs with the U.S. Federal Aviation Administration's determination that the proposed undertaking will not pose an effect to historic properties with the avoidance and monitoring requirements outlined in your letter.

If you have any questions concerning this correspondence, please feel free to call Rebecca Lynn Palmer at (775) 684-3443 or by E-mail at rlpalmer@clan.lib.nv.us.

Sincerely,

A handwritten signature in cursive script, reading "Alice M. Baldrice".

Alice M. Baldrice, Deputy
State Historic Preservation Officer

H.1.1 Native American Tribes and Bands Contacted

The following 15 Native American Tribes and Bands were consulted during preparation of the Draft Environmental Assessment. **Attachment H-4** is a sample letter sent to the Tribes and Bands.

Charles Wood, Chair
Chemehuevi Indian Tribe
PO Box 1976
Havasupai Lake, CA 92363

Nora McDowell, Chair
Fort Mojave Indian Tribe
500 Merriman Ave.
Needles, CA 92363

Charles Vaughn, Chair
Hualapai Tribal Council
PO Box 179
Peach Springs, AZ 86434

Gary Tom, Chair
Kaibab Paiute Tribe
HC 65, Box 2
Fredonia, AZ 86022

Alfreda Mitre, Chair
Las Vegas Paiute Tribe
One Paiute Drive
Las Vegas, NV 89106

Darren Daboda, Chair
Moapa Band of Paiutes
PO Box 607
Moapa, NV 89025

Richard Arnold, Chair
Pahrump Paiute Tribe
PO Box 3411
Pahrump, NV 89041

Lora Tom, Chair
Paiute Indian Tribe of Utah
440 N. Paiute Drive
Cedar City, UT 84720-2613

Jeanine Borchardt, Chair
Indian Peaks Band
Paiute Indian Tribes of Utah
440 North Paiute Drive
Cedar City, UT 84720

Phil Pikyavit, Chair
Kanosh Band
Paiute Indian Tribes of Utah
PO Box 101
Kanosh, UT 84637

Cindy Charles, Chair
Koosharem Band
Paiute Indian Tribes of Utah
440 North Paiute Drive
Cedar City, UT 84720

Glenn Rogers, Chair
Shivwits Band
Paiute Indian Tribes of Utah
370 North 400 West, #2
St. George, UT 84770

Dean Mike, Chair
Twenty-Nine Palms Band of Mission Indians
46-200 Harrison Place
Coachella, CA 92236

Daniel Eddy, Jr., Chair
Colorado River Indian Tribes
Rt 1, Box 23-B
Parker, AZ 85344

Alex Shepherd, Chair
Cedar Band
Paiute Indian Tribe of Utah
5267 West 3700 South
Cedar City, UT 84720

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U.S Department
of Transportation

Federal Aviation
Administration

Western-Pacific Region
Airports Division

Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009-2007

June 21, 2007

Charles Wood, Chair
Chemehuevi Indian Tribe
PO Box 1976
Havasas Lake, CA 92363

Dear Dear Sir or Madame:

**Proposed Southern Nevada Regional Heliport
Clark County, Nevada
Government-to-Government Consultation Initiation**

The Federal Aviation Administration (FAA) in cooperation with the Clark County Department of Aviation (CCDOA) the sponsor for the proposed Southern Nevada Regional Heliport, is preparing an Environmental Assessment evaluating the potential impacts resulting from the construction and operation of the proposed heliport.

Purpose of Government-to-Government Consultation

The primary purpose of government-to-government consultation as described in Federal Executive Order 13175 "Consultation and Coordination with Indian Tribal Governments" and FAA's Order 1210.20 "American Indian and Alaska Native Tribal Consultation Policy and Procedures" is to ensure that Federally Recognized Tribes are given the opportunity to provide meaningful and timely input regarding proposed FAA actions that uniquely or significantly affect Tribes.

Consultation Initiation

With this letter, the FAA is seeking input on concerns that uniquely or significantly affect your Tribe related to planned and proposed airport improvements. Early identification of Tribal concerns will allow the FAA and CCDOA to consider ways to avoid and minimize potential impacts to Tribal resources and practices as project planning and alternatives are developed and refined. We would be pleased to discuss details of the proposed project with you.

Project Information

The State of Nevada passed legislation that compels Clark County to construct a heliport away from McCarran International Airport. This new heliport will reduce helicopter noise impacts on the communities surrounding McCarran International. The June 2003 Nevada State Legislature amendment of the Nevada Revised Statutes, Chapter 495 (NRS 495), required Clark County to choose a preferred non-urban heliport site. An environmental assessment (EA) is being completed for the non-urban heliport facility located at the South of Sloan site (Clark County Assessor's Parcel No. 204-01-000-004 [about 229 acres]). (See Included Map)

Some of the benefits for the creation of the non-urban site are ensuring adequate space and facilities are preserved at McCarran International Airport to serve its principal function as the primary commercial passenger service airport in the region. Also, to provide adequate space for grow of the helicopter air tours to the Grand Canyon and reduce helicopter tour flights over residential areas of Clark County. One requirement is that the helicopters be flown along a defined 2-mile-wide corridor through the Sloan Canyon NCA; this defined corridor avoids the highest ridges in the NCA and big game guzzler (i.e. water catchment) locations. Another requirement is that the helicopters be flown at a minimum altitude of between 500 feet and 1,000 feet above ground level for operations on the western border and eastern border of the Sloan Canyon NCA, respectively. There are two construction phases, the first is expected to be completed in 2010; at which time the heliport is expected to become operational.

Confidentiality

We understand that you may have concerns regarding the confidentiality of information on areas or resources of religious, traditional and cultural importance to the Tribe. We would be happy to discuss these concerns and develop procedures to ensure the confidentiality of such information is maintained.

FAA Contact Information

If you wish to provide comments related to this proposed project, please contact David B. Kessler, Regional Environmental Protection Specialist, at the address above, at 310/725-3615, or by e-mail at Dave.Kessler@faa.gov; or please feel free to contact me directly.

Airport Owner and Operator Contact Information

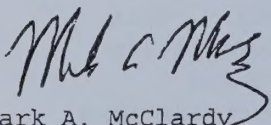
In addition, you may wish to include the CCDOA in your response so that they may be aware of your comments. The Airport owner and operator's point of contact for this project is:

Ms. Pamela Adams
Principal Planner
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, Nevada 89111-1005

Project Consultation Options Form

Your timely response will greatly assist us in incorporating your concerns into project planning. For that purpose, we respectfully request that you complete the enclosed Project Consultation Options form and forward it to the FAA within thirty days of your receipt of this correspondence.

Sincerely,


Mark A. McClardy
Manager, Airports Division

Enclosure

cc: Ron Escobar, Secretary-Treasurer, Chemehuevi Indian Tribe
SFO-600

Tribal Consultation Options

Charles Wood, Chair
Chemehuevi Indian Tribe
PO Box 1976
Havasupai Lake, CA 92363

Project Name: **Southern Nevada Regional Heliport**

Please check the appropriate response:

- _____ The **Chemehuevi Indian Tribe**, will continue coordination for this proposed project directly with Owner / Operator of the airport. *Please note that if the Tribe initially chooses to consult / coordinate with the airport owner/operator, the Tribe may later decide to consult directly with the FAA.*
- _____ The **Chemehuevi Indian Tribe**, a federally recognized tribe, and would like to consult directly with the Federal Aviation Administration in a government-to-government relationship for this proposed project.
- _____ The **Chemehuevi Indian Tribe**, has no interest associated with this proposed project and further consultation is not required.

Use the back of this form or additional sheets if you would like to make additional comments.

Tribal Leader (Please print)

Telephone

Tribal Leader (Signature)

Date

Mail:

Phone:

Fax:

e-mail:

Other: (please describe)

If you have chosen to proceed with consultation, please identify a Tribal Representative for the consultation.

Name of Formal Tribal Representative (Please print)

Telephone

Name of Formal Tribal Representative (Signature)

Date

Please mail to:

Envelope Enclosed:

David B. Kessler

Western Pacific Region

Airports Division, AWP-600

P.O. Box 92007

Los Angeles, CA 90009-2007

Dave.Kessler@faa.gov

Or, fax to:

310-725-6848

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H.1.2 Comments from Native American Tribes and Bands

Two written responses were received from Native American tribes regarding consultation on the Southern Nevada Regional Heliport Project. The Chemehuevi Indian Tribe and the Colorado River Indian Tribe provided written comments and are included as **Attachment H-5** and **Attachment H-6**, respectively.

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Tribal Consultation Options

Charles Wood, Chair
Chemehuevi Indian Tribe
PO Box 1976
Havasas Lake, CA 92363

Project Name: **Southern Nevada Regional Heliport**

Please check the appropriate response:

☒ The **Chemehuevi Indian Tribe**, will continue coordination for this proposed project directly with Owner / Operator of the airport. *Please note that if the Tribe initially chooses to consult / coordinate with the airport owner/operator, the Tribe may later decide to consult directly with the FAA.*

☐ The **Chemehuevi Indian Tribe**, a federally recognized tribe, and would like to consult directly with the Federal Aviation Administration in a government-to-government relationship for this proposed project.

☐ The **Chemehuevi Indian Tribe**, has no interest associated with this proposed project and further consultation is not required.

Use the back of this form or additional sheets if you would like to make additional comments.

Ronald Escobar
Tribal Leader (Please print)

760-858-4219
Telephone

[Signature]
Tribal Leader (Signature)

7-27-02
Date

Mail:

Phone:

Fax:

e-mail:

Other: (please describe)

If you have chosen to proceed with consultation, please identify a Tribal Representative for the consultation.

Ronald Escobar
Name of Formal Tribal Representative (Please print)

760-858-4219
Telephone

[Signature]
Name of Formal Tribal Representative (Signature)

7-27-02
Date

Please mail to:

Envelope Enclosed:

David B. Kessler

Western Pacific Region

Airports Division, AWP-600

P.O. Box 92007

Los Angeles, CA 90009-2007

Dave.Kessler@faa.gov

Or, fax to:

310-725-6848

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COLORADO RIVER INDIAN TRIBES

Colorado River Indian Reservation

ROUTE 1 BOX 23-B
PARKER, ARIZONA 85344
TELEPHONE (520) 669-9211

Received McCarran Intl Airport

August 14, 2007

AUG 23 2007

Ms. Pamela Adams, Principal Planner
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, NV 89111-1005

Planning Division

Dear Ms. Adams:

Thank you for your letter dated June 21, 2007, requesting comment on the proposed Southern Nevada Regional Heliport located in Clark County, Nevada. Clark County will construct a heliport away from McCarran International Airport. This new heliport will reduce heliport noise impacts on the communities surrounding McCarran International.

At this time, the Colorado River Indian Tribes are in concurrence with your findings of no historic/cultural properties affected by the above referenced activities based on the information you have provided. However, the Colorado River Indian Tribes does reserve the right to intervene at a later date if new or omitted information may become available that is related to the proposed project.

Thanking you in advance for your kind attention and consideration of this response.

Sincerely,

A handwritten signature in dark ink, appearing to read "Michael Tsosie".

Michael Tsosie
Museum Director

Cc: Eric Shepard, Attorney General
Lisa Fisher, Archaeological Compliance Technician
File: Letter 23

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Appendix I. Fish and Wildlife Consultation

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Appendix I. Fish and Wildlife Consultation

This section documents the fish and wildlife service consultation conducted during the preparation of this EA. This agency consultation with the U.S. Fish and Wildlife Service (USFWS) is required by Section 7 of the Endangered Species Act.

I.1 Biological Assessment and Biological Opinion

A Biological Assessment of the Area of Disturbance, as defined in Chapter III, was completed in July 2007 and submitted to the USFWS. The Biological Assessment, completed in July 2007, is included as **Attachment I-1**. The Biological Opinion, as issued by the USFWS on July 1, 2008, is provided as **Attachment I-2**.

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BIOLOGICAL ASSESSMENT
SOUTHERN NEVADA REGIONAL HELIPORT
CLARK COUNTY, NEVADA

July 2007



Prepared for:

U.S. Bureau of Land Management
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130

U.S. Federal Aviation Administration
Western Pacific Region – Airports Division
P.O. Box 92007
Los Angeles, California 90009

Ricondo & Associates, Inc.
221 Main Street, Suite 1550
San Francisco, California 94105

Prepared by:

SWCA Environmental Consultants
2820 West Charleston Boulevard, Suite 15
Las Vegas, Nevada 89102
www.swca.com

SWCA
ENVIRONMENTAL CONSULTANTS

BIOLOGICAL ASSESSMENT

SOUTHERN NEVADA REGIONAL HELIPORT

CLARK COUNTY, NEVADA

Prepared for:

U.S. Bureau of Land Management
4701 North Torrey Pines Drive
Las Vegas, Nevada 89130

U.S. Federal Aviation Administration
Western Pacific Region – Airports Division
P.O. Box 92007
Los Angeles, California 90009

Ricondo & Associates, Inc.
221 Main Street, Suite 1550
San Francisco, California 94105

Prepared by:

SWCA Environmental Consultants
2820 West Charleston Boulevard, Suite 15
Las Vegas, Nevada 89102
Contact: Eric Koster
Phone: 702-248-3880 ext. 234

July 2007

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1.0 INTRODUCTION

The Clark County Department of Aviation (CCDOA) is the sponsor of a proposed heliport project and is conducting an Environmental Assessment (EA) on the potential impacts of the heliport. The EA for the Southern Nevada Regional Heliport is being completed in compliance with standards established in the National Environmental Policy Act (NEPA), FAA Order 1050.1E, *Environmental Impact: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.

The purpose of this biological assessment (BA) is to review the proposed Southern Nevada Regional Heliport project in sufficient detail to determine to what extent the Proposed Action may affect federally threatened, endangered, or candidate species. Although the U.S. Fish and Wildlife Service (USFWS) does not require the assessment of impacts to State or Bureau of Land Management (BLM) sensitive species, they are briefly reviewed in Appendix A to further describe the biological resources in the project area. This BA is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (ESA; 16 U.S.C. 1536 (c)), and follows the standards established in ESA guidance.

The species considered in this document are:

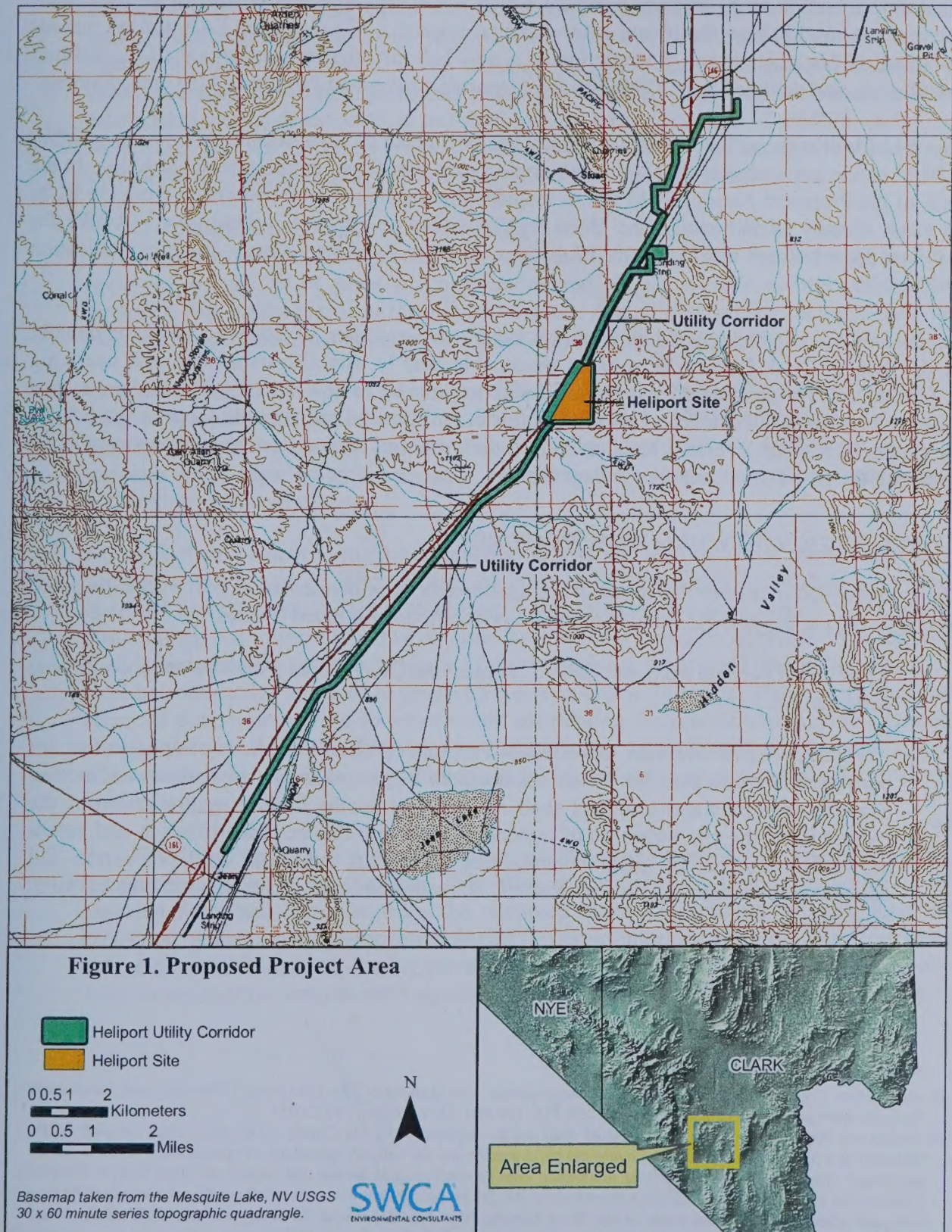
- Desert tortoise (*Gopherus agassizii*; Threatened)

2.0 PROPOSED ACTION

Clark County has identified a purpose and need to provide a site, facilities, and preferred flight corridors for use primarily by helicopters providing air tours of the Grand Canyon. Such provisions would allow the County to accommodate continually increasing demand for helicopter air tours in the Las Vegas region; to reserve limited land capacity at McCarran International Airport for that airport's intended role within the Clark County Airport System as a primary airport for commercial passenger service; and to reduce helicopter tour overflights of existing residential areas of Clark County.

The Proposed Action includes the construction and operation of a general aviation heliport. A conceptual layout of the heliport can be found in Appendix B. The project area for the Proposed Action includes a site for the heliport (Parcel # 20401000004, known as the South of Sloan site), corridors required to extend utilities to the heliport, and a site for a pumping station. Figure 1 shows the project area, which is located in Clark County, Nevada, in the following townships and ranges on the Jean, Hidden Valley, and Sloan, Nevada, USGS 7.5' quadrangles:

- Sections 8, 9, 16, 17, 18, 19, 20, 29, 30, and 31 of Township 23 S, Range 61 E
- Section 36 of Township 23 S, Range 60 E
- Sections 1, 11, 12, 14, 15, 16, 21, 28, 29, 31, and 32 of Township 24 S, Range 60 E
- Section 6 of Township 25 S, Range 60 E
- Sections 1 and 12 of Township 25 S, Range 59 E



The Federal Aviation Administration (FAA) will act as the lead federal agency, and will make a final determination as to whether a federal action associated with this project or its reasonable alternatives would cause significant environmental impacts. The requested FAA actions include approval of the location and construction of a new heliport, first-time approval of the heliport layout plan, and declaration of eligibility for Airport Improvement Program (AIP) grant funding.

The BLM will serve as a cooperating agency and will make its own determination as to whether a BLM action associated with this project would cause significant environmental impacts. In the case of the Proposed Action, BLM action includes the transfer of land ownership from the BLM to Clark County. Additionally, the BLM will be asked to approve rights-of-way (ROW) for utilities; these utilities would require 17.4-miles of ROW for water, power, and communication utilities.

Legislation was enacted (signed by President Bush) on November 30, 2005¹ to allow the transfer of the land to Clark County, as soon as practicable, and to establish ownership and operating conditions². The land transfer is subject to environmental review for NEPA compliance; as a primary component of the Proposed Action, this environmental review will occur in the EA for the Southern Nevada Regional Heliport. Once the Proposed Action has received environmental approval, the BLM can complete the land transfer.

CONSERVATION/MINIMIZATION MEASURES

The conservation measures listed below are intended to be implemented as part of the Proposed Action to reduce the potential effects of the Proposed Action on listed species.

1. All relevant permits from the State of Nevada and Clark County shall be obtained prior to construction.
2. A Worker Environmental Awareness Program (WEAP) shall be implemented for construction crews prior to the commencement of groundbreaking/excavation activities. Training materials and briefings shall include, but not be limited to, discussion of the federal ESA, the consequences of noncompliance with this act, identification and values of wildlife and natural plant communities, hazardous substance spill prevention and containment measures, and review of all required and recommended conservation measures.

¹ *Transportation, Treasury, Housing and Urban Development, The Judiciary, The District of Columbia, and Independent Agencies Appropriations Act of 2006*, Pub. L. 109-115, 119 Stat. 2429, Section 180 (2005).

² Ownership and operating conditions: The parcel shall not be disposed of by the County. The parcel shall be used for the operation of a heliport facility. If the County ceases to use the site for heliport operations, the parcel shall revert to federal ownership. Any for-profit helicopter tour originating from or concluding at the site that crosses the Sloan Canyon National Conservation Area (NCA) (a) shall pay a conservation fee, (b) except for safety reasons, shall not fly outside a specific two-mile path when inside the boundaries of the Sloan Canyon NCA, and (c) except for safety reasons, shall not fly below specific heights above the ground when crossing the boundaries of the Sloan Canyon NCA.

3. As part of the WEAP, a desert tortoise education program shall be presented to all personnel who will be on site. All permittees and their employees shall be informed, through this education program, of the occurrence of the desert tortoise in the project area and of the threatened status of the species. They shall also be advised of the definition of "take", the potential impacts to the tortoise, and the potential penalties for taking a threatened species. All field personnel involved in the activities permitted herein shall be educated about the desert tortoise and shall be alert for the presence of wildlife, including desert tortoise. All informed persons shall sign a statement indicating that they have completed the education program and understand fully its provisions.
4. Where feasible, the project area including utility corridors will be fenced with a temporary tortoise-proof fence prior to ground disturbing activities. Fence design shall be approved by the BLM prior to construction and should include entrance/exit areas equipped with cattle guards or tortoise-proof gates. A qualified tortoise biologist shall be on-site during fence installation to ensure that no tortoises are harmed.
5. In areas where tortoise-proof fencing is difficult to install or cost-prohibitive, qualified on-site biologists shall monitor all construction vehicles and heavy machinery to ensure that no desert tortoises are harmed. The biologists would be responsible for moving tortoises out of harm's way if necessary, providing instruction as needed, and monitoring and reporting on compliance.
6. No more than 24 hours prior to commencement of surface-disturbing project activities (including tortoise-proof fencing) and 24 hours following fence installation activities, qualified biologists shall do a 100 percent desert tortoise clearance survey of the entire project area. All tortoise burrows or other burrows that could be occupied by a tortoise shall be searched for resident tortoises. If no tortoises are discovered inside the burrow, it shall be collapsed or blocked to prevent tortoise re-entry. The entire project area shall be searched three times unless no tortoises are seen during the second search. Any tortoises or eggs discovered shall be excavated by hand to allow for safe removal. To avoid injury or death of desert tortoises, only authorized biologists may remove and handle tortoises or tortoise eggs.
7. Should a desert tortoise or a desert tortoise nest be encountered during construction, all construction activities in the area shall stop and a qualified tortoise biologist shall excavate nests and tortoises from the occupied area. All tortoises or eggs shall be excavated by hand to allow for safe removal. To avoid injury or death of desert tortoises, only authorized biologists may remove and handle tortoises or tortoise eggs. Ground disturbance shall not resume until approved by the BLM or USFWS Authorized Officer.

8. Any tortoises found on the property shall be removed and released 300 to 1000 feet outside of the boundary nearest the point of collection by qualified tortoise biologists. Prior to handling any tortoise, permits shall be obtained from the appropriate state and federal agencies and BLM protocol shall be followed when handling and releasing desert tortoises or eggs. If removed from a burrow, the animal should be placed in the shade of a shrub, in an unoccupied burrow, similar to the hibernacula in which it was found, or in an artificially constructed burrow following BLM protocol. Tortoises should be placed on lands under the ownership of the BLM unless written permission is granted by the private landowner. The BLM land should not be slated for development in the near future to ensure the relocated tortoises will not need to be relocated again. Tortoises that cannot be appropriately relocated will be removed from the area and placed with the Desert Tortoise Conservation Center. Tortoises showing symptoms of Upper Respiratory Tract Disease (URTD) shall be left in the wild after gathering BLM specified data.
9. If possible, construction shall be limited to those months when special status and/or migratory birds do not have potential to be nesting in the project area. If construction must occur during the months of March 15 through July, a qualified biologist must be on-site prior to groundbreaking activities to perform breeding bird surveys and identify nesting birds. If active nests are located, then an appropriately-sized buffer area must be established, marked and avoided during construction so that laying, incubation and the rearing of young continues until the young have fledged.
10. Weed monitoring shall occur for species identified by the State of Nevada as well as for additional species specified by Clark County during a given year. Such species comprise the official list of weeds for which a county may cost-share funding for control and removal efforts. Should such species be found during monitoring, control and eradication efforts shall be implemented following County control procedures. Herbicides shall not be used around the gravel pit unless approved in writing by the BLM.
11. Clark County shall implement a litter control program during construction activities that will include the use of covered, raven-proof trash receptacles, removal of trash from the construction site to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility at the end of each work week. This effort will reduce the attractiveness of the area to opportunistic predators such as coyotes, kit foxes, and common ravens.
12. Within the project area, control erosion and runoff using BMP's as recommended by the FAA and BLM.
13. In order to minimize erosion and soil deposition outside of the project area, ephemeral washes within the project area shall be avoided to the maximum extent practicable.
14. A maximum speed limit of 15 miles per hour shall be maintained while traveling in areas of groundbreaking or excavation. This effort will reduce the potential for vehicle-wildlife related collisions.

15. Any fuel or hazardous waste leaks or spills shall be contained immediately and cleaned up at the time of occurrence. Contaminated soil will be removed and disposed of at an appropriate facility.
16. Reclamation of the proposed project site and utility corridors would consist of sloping cut areas to 2.5:1 or 3:1. Compacted areas would be ripped and the area seeded with native seed. Any salvaged plants would also be used in reclamation.

3.0 ENVIRONMENTAL SETTING

PROJECT AREA

The South of Sloan site is located approximately 17 miles south of Las Vegas in Clark County, Nevada, on the east side of I-15 (Figure 1). The entire heliport site is located on lands that are administered by the BLM – Las Vegas Field Office, but will be congressionally granted to the CCDOA. The utility corridors occur largely within BLM administered land. The project area is situated within the Great Basin portion of the Basin and Range Physiographic Province. Alluvial fans extend from the surrounding mountain ranges to the Valley floor. The project area includes approximately 526 acres including the heliport site, 17.4-miles of utility corridors, and the pumping station site.

The heliport site is approximately 229-acres and ranges from 2,960-3,360 feet (902-1,024 m) above mean sea level (MSL). Surface soils within the heliport site are typically gravelly sandy loam and do not have a high gypsum content. The eastern portion of the site has steep, rocky terrain and falls within the transition from the creosote bush community to blackbrush community. The western portion of the site is much flatter and has friable soils conducive to burrowing. Several ephemeral channels traverse the heliport site from east to west. These channels support little riparian vegetation and are isolated from other waters. There are no perennial watercourses within the heliport site and the ephemeral channels do not constitute jurisdictional waters because they are isolated from downstream waters.

The utility corridors run north and south of the heliport site and occur mainly within the creosote bush community. The elevation along the northern section of utility lines ranges from 2500-2960 feet (762-902 m) MSL, while the southern section ranges from 2850–3040 feet (869-927 m) MSL. Geology and soils characteristics are similar to the western portions of the heliport site. Several ephemeral channels traverse the site from east to west on the northern end of the ROW and from west to east along the southern end of the ROW. There are no perennial watercourses within the ROW and the ephemeral channels do not constitute jurisdictional waters because they are within an enclosed hydrographic basin with no outlet.

ACTION AREA

The action area includes all areas in which the Proposed Action may directly or indirectly affect mobile sensitive species. Directly affected areas for all species consist of the direct disturbance area within the project area. Indirectly affected areas include the project area and a buffer zone, or Zone of Influence (ZOI), of up to 2,400 feet surrounding the project area.

VEGETATION

The action area consists entirely of Mojave Desert shrubland, which is characterized most importantly by its elevation, gentle slopes, and dominant vegetation. The area is dominated by the Sonora-Mojave Creosote Bush-White Bursage Desert Scrub (creosote bush) Community (EPA 2005). The creosote bush community, in which white bursage (*Ambrosia dumosa*) commonly co-dominates, occurs on alluvial slopes, valley floors, and mountain slopes below 4,000 feet (1,219 m) MSL. This community is usually found on well-drained soils, forming a continuous layer, except on the rockiest slopes, washes, saltbush flats, and dry lakebeds. Vegetation cover ranges from 5 percent to 80 percent within the project area. Although creosote bush, white bursage, Mojave yucca (*Yucca schidigera*), desert trumpet (*Eriogonum inflatum*), and Mormon tea (*Ephedra nevadensis*) dominate the landscape, a number of other plants were observed and recorded during surveys of the project area. These plants include:

Upland Species

Arabian schismus (*Schismus arabicus*)
 Beardtongue (*Penstemon sp.*)
 Big galletta (*Pleuraphis rigida*)
 Bristly fiddleneck (*Amsinckia tessellata*)
 Broom snakeweed (*Gutierrezia sarothrae*)
 Burrobrush (*Hymenoclea salsola*)
 Burrobush (*Ambrosia dumosa*)
 Coyote tobacco (*Nicotiana attenuata*)
 Creosote bush (*Larrea tridentata*)
 Desert globe mallow (*Sphaeralcea ambigua*)
 Desert indianwheat (*Plantago ovata*)
 Desert marigold (*Baileya multiradiata*)
 Desert trumpet (*Eriogonum inflatum*)
 Devil's spineflower (*Chorizanthe rigida*)
 Fourwing saltbush (*Atriplex canescens*)
 Fremont's dalea (*Psoralea fremontii*)
 Littleleaf ratany (*Krameria erecta*)
 Louisiana sagewort (*Artemisia ludoviciana*)
 Low woollygrass (*Dasyochloa pulchella*)
 Mexican bladdersage (*Salizaria mexicana*)
 Nevada joint-fir (*Ephedra nevadensis*)
 Parry's wirelettuce (*Stephanomeria parryi*)
 Purple sage (*Salvia dorii*)
 Red brome (*Bromus rubens*)
 Robinson's monardella (*Monardella robinsonii*)

Sandpaper plant (*Petalonyx thurberi*)
 Schott's pygmycedar (*Peucephyllum schottii*)
 Shadscale (*Atriplex confertifolia*)
 Spiny menodora (*Menodora spinescens*)
 Stork's bill (*Erodium cicutarium*)
 Vervain (*Verbena sp.*)
 Virgin River brittlebush (*Encelia virginensis*)
 Waterjacket (*Lycium andersonii*)
 Winterfat (*Krascheninnikovia lanata*)
 Yellow nightshade groundcherry (*Physalis crassifolia*)

Riparian Species

Catclaw Acacia (*Acacia greggii*)
 Yellow rabbit brush (*Chrysothamnus viscidiflorus*)

Succulents

Beavertail cactus (*Opuntia basilaris*)
 Cottontop cactus (*Echinocactus polycephalus*)
 Devil cholla (*Opuntia stanlyi*)
 Diamond cholla (*Cylindropuntia ramosissima*)
 Gold cholla (*Cylindropuntia echinocarpa*)
 Johnson's fish hook cactus (*Sclerocactus johnsii*)
 Joshua tree (*Yucca brevifolia*)
 Mojave yucca (*Yucca schidigera*)
 Spinystar (*Escobaria vivipara*)

WILDLIFE

Desert ecosystems typically exhibit a low diversity of wildlife species when compared to mountain or forest ecosystems. Small reptiles and birds suited for dry conditions are regularly the only wildlife seen in the creosote bush community. The surveys of the action area, performed by SWCA between August 27 and August 29, 2004 and October 25, 2006 and November 9, 2006, yielded several species of wildlife commonly seen in this desert community including small mammals, reptiles, and birds. These species include:

Mammals

Black-tailed jackrabbit (*Lepus californicus*)
 Western cottontail (*Sylvilagus audubonii*)
 White-tailed antelope ground squirrel
 (*Amnospermophilus leucurus*)
 Coyote (*Canis latrans*)

Reptiles

Mojave green rattlesnake (*Crotalus
 scutulatus*)
 Desert tortoise (*Gopherus agassizii*)
 Side-blotched lizard (*Uta stansburiana*)

Raptors

Western burrowing owl (*Athene cunicularia
 hyugaea*)
 Red-tailed hawk (*Buteo jamaicensis*)

Other Birds

Black-throated sparrow (*Amphispiza bilineata*)
 Sage sparrow (*Amphispiza belli*)
 Lesser nighthawk (*Chordeiles acutipennis*)
 Common raven (*Corvus corax*)
 Gambel's quail (*Callipepla gambelii*)
 Greater roadrunner (*Geococcyx californianus*)
 Loggerhead shrike (*Lanius ludovicianus*)
 Mourning dove (*Zenaida macroura*)
 Cactus wren (*Campylorhynchus
 brunneicapillus*)
 Say's phoebe (*Sayornis saya*)
 Horned lark (*Eremophila alpestris*)
 House finch (*Carpodacus mexicanus*)
 Western meadowlark (*Sturnella neglecta*)

4.0 SITE INVESTIGATIONS

The assessment and conservation measures contained within this document are based on regulatory and agency guidelines, the best available scientific information on the distribution and abundance of the affected species, and the associated effects of the Proposed Action on these species. This BA includes the most recent results of survey efforts and a detailed review of pertinent biological and management literature.

SURVEY PROTOCOL

SWCA biologists followed standard BLM and USFWS survey protocol that states that a presence-absence survey should be conducted for any surface-disturbing project resulting in the clearing or crushing of vegetation. The presence-absence survey should include a 100% cover survey for desert tortoises, tortoise habitat, and tortoise signs (e.g., scat, burrows, and carcasses) over the entire project area, plus a survey of the ZOI at intervals of 100, 300, 600, 1,200, and 2,400 feet around the disturbance area. ZOI surveys are performed to give an accurate representation of tortoise activity in the action area. The entire project area and the ZOI (i.e. the action area) were surveyed using belt transects at a maximum of 30 feet in width. Because surveys were specifically performed for desert tortoise, only habitat deemed suitable for this

species was surveyed, and this habitat is described further in Section 5.0. Biologists also surveyed for general wildlife and sensitive species, while performing tortoise surveys. Other wildlife species observed during these surveys are listed in the wildlife section above.

FIELD SURVEYS

Between August 27 and August 29, 2004, SWCA biologists performed pedestrian surveys of the heliport site. Parallel transects were walked throughout the entire site at 30-foot intervals between biologists. The biologists searched for live desert tortoises, their sign, including tracks, scat, carcasses, and burrows, and their habitat. When encountered, width and length of live tortoises were estimated. The sex and general health of each individual was also estimated. Length of the gular horn, flatness of the plastron, tail length, and the presence of inflated chin glands were all used when assessing the sex of each individual. A safe distance was maintained from each tortoise and no tortoises were harassed during field surveys. Although sign were recorded on data forms, specific locations were not recorded using a global positioning system (GPS).

The Proposed Action and project design were later refined and utility corridors were added. Therefore, between October 25 and November 9, 2006, SWCA biologists performed pedestrian surveys of the remaining action area (utility corridors, ZOI, and additional 90-ft southern and eastern sections of heliport site) for desert tortoise. Surveys were conducted using the same protocol as the 2004 surveys; however, GPS points of all sign were recorded.

During both 2004 and 2006 surveys, biologists also recorded observations of other special status species or their habitat. General vegetation and wildlife species observed were also recorded. After each day, survey forms were collected.

5.0 SPECIES ACCOUNTS

Threatened and endangered species are placed on a federal list by the USFWS and receive protection under the ESA. The USFWS has listed 17 species within Clark County, Nevada, as endangered, threatened, or candidate species (Table 1). Of these species, the desert tortoise is the only species with potential to occur within the action area. All of the other species in Table 1 are found in riparian or aquatic habitats, none of which occur in the action area. Table 1 below provides a list of all the endangered, threatened, and candidate species within Clark County and the presence/absence of potential habitat for those species within the action area.

A variety of other sensitive plant and wildlife species have the potential to occur within the action area as well. These species are considered special status or sensitive species by the BLM or are included on the sensitive species list for Nevada, which is maintained by the Nevada Natural Heritage Program (NNHP). A brief description and analysis of these species is included in Appendix A.

Table 1. USFWS Listed Endangered, Threatened, and Candidate Species within Clark County

Common Name	Scientific Name	Status	Potential Habitat*
Plants			
Slender moonwort	<i>Botrychium lineare</i>	C	None
Birds			
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	C	None
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	None
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	None
Wood stork	<i>Mycteria americana</i>	E	None
Brown pelican	<i>Pelecanus occidentalis</i>	E	None
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	E	None
Reptiles			
Desert tortoise	<i>Gopherus agassizii</i>	T	Present
Amphibians			
Relict leopard frog	<i>Rana onca</i>	C	None
Fishes			
Pahrump poolfish	<i>Empetrichthys latos</i>	E	None
Humpback chub	<i>Gila cypha</i>	E	None
Bonytail chub	<i>Gila elegans</i>	E	None
Virgin River chub	<i>Gila seminuda</i>	E	None
Moapa dace	<i>Moapa coriacea</i>	E	None
Lahontan cutthroat trout	<i>Oncorhynchus clarki henshawi</i>	T	None
Woundfin	<i>Plagopterus argentissimus</i>	E	None
Razorback sucker	<i>Xyrauchen texanus</i>	E	None

Source: USFWS 2005

Status: C = Candidate; T = Threatened; E = Endangered; PT = Proposed Threatened

* Potential habitat within the action area is based on project survey data and designated critical habitat.

DESERT TORTOISE**LISTING STATUS**

In response to the dramatic decrease in numbers of the Mojave population of the desert tortoise throughout its entire range, the USFWS (1989) emergency-listed the species as endangered on August 4, 1989 (54 FR 32326). The Mojave population was then proposed under normal listing procedures on October 13, 1989 (54 FR 42270), and subsequently listed as threatened on April 2, 1990 (55 FR 12178) (USFWS 1990). The State of Nevada has listed the desert tortoise as a fully protected species and has also designated the desert tortoise as its official state reptile.

On March 30, 1993, the USFWS (1993a) released the *Draft Recovery Plan for the Desert Tortoise (Mojave Population)* (58 FR 16691). The Final Recovery Plan was released on June 28, 1994 (USFWS 1994b). The Recovery Plan for the desert tortoise divides the species' range into six recovery units and recommends the establishment of 14 reserves, or Desert Wildlife Management Areas (DWMAs), ranging from 160 to 1,300 square miles in size. Using the DWMAs as the basis for areas recommended for recovery, the USFWS (1993b) proposed a rule to list critical habitat for the desert tortoise on August 30, 1993 (58 FR 45748), under provisions of the ESA (16 U.S.C. 1531 et seq.). Following an extensive review of information and public comments, the USFWS formally designated more than 10,000 square miles of critical habitat for the species in a final ruling, published February 8, 1994 (USFWS 1994c). The action area for the proposed project does not occur within desert tortoise critical habitat.

DISTRIBUTION, DESCRIPTION, AND LIFE HISTORY

The distribution of the desert tortoise covers the broadest range of latitude, climate, habitats, and biotic regions of any North American tortoise (Germano et al. 1994). The range of the desert tortoise roughly approximates the distribution of the creosote bush scrub community and includes the Mojave and Sonoran Deserts in southern California, southern Nevada, northwestern Arizona, the southwestern corner of Utah, and Sonora and northern Sinaloa, Mexico.

Habitat requirements for the desert tortoise are somewhat variable in regard to the different regions in which it occurs and seem to correspond to genetic and morphological differences as well. In Nevada, desert tortoises typically occur on flats, valleys, bajadas, and rolling hills, generally between 2,000 to 3,500 feet (610 to 1097 m) in elevation.

Mojave desert tortoises are primarily active between March and June, with a secondary activity period between September and October. Tortoises construct and maintain a series of up to 7 to 12 single-opening burrows at a given time (Barrett 1990; Bulova 1994). During inactive periods, tortoises hibernate, estivate, or rest in their burrows or caliche caves, spending as much as 98% of their time underground (Marlow 1979; Nagy and Medica 1986). During active periods, they usually spend nights and the hotter portion of the day in their burrows.

Tortoise activities are primarily concentrated in core areas or home ranges. Home ranges of tortoises overlap because they do not defend a specific or exclusive area. Home range sizes can be from 10 to 450 acres and can vary with sex, age, season, and density or availability of resources (USFWS 1994c). Tortoises typically avoid plateaus, playas, sand dunes, steep slopes (more than 20%), and areas with obstacles, such as dense vegetation and rocky terrain that would inhibit movement. Tortoises generally prefer areas characterized by scattered shrubs and abundant inter-space for growth of herbaceous plants, with soils ranging from sand to sandy gravel. Friable soil is important for digging burrows.

There are significant morphological, genetic, ecological, and behavioral differences between desert tortoise populations in different geographical areas within its range, and the species is therefore divided into two distinct populations: Sonoran and Mojave. The Sonoran population occurs south and east of the Colorado River in Arizona and Mexico, and the Mojave population occupies those portions of the Mojave and Colorado River Deserts north and west of the Colorado River, in southwestern Utah, northwestern Arizona, southern California, and southern

Nevada. The Mojave population is the one evaluated within this document. In Nevada, where it is federally listed and state-listed, desert tortoises occur over most of Clark County and in portions of Nye, Lincoln, Mineral, and Esmeralda Counties. The desert tortoise's range in Nevada has been reduced to 50–60% of its historic range since the 1920s and is now highly fragmented.

Desert tortoises eat a variety of annual grasses and flowers, as well as perennial plants, including portions of some shrubs and cactus. Forage species selected by tortoises in the Mojave Desert include Dwarf white milkvetch (*Astragalus didymocarpus*), Layne's milkvetch (*A. layneae*), evening primrose (*Camissonia boothii*), rattlesnake weed (*Chamaesyce albomarginatus*), hill lotus (*Lotus humistratus*), and desert wishbone bush (*Mirabilis bigelovii*; Jennings 1993).

STATUS OF SPECIES IN THE ACTION AREA

It is presumed that populations of Mojave Desert Tortoise are declining throughout Clark County (RECON 2000). The habitat in and around the action area appears to be of high quality; however, there was disturbance in portions of the action area, including the project area. Dirt roads were present where people have dumped trash and created unofficial shooting ranges. The project area covers approximately 526 acres of desert tortoise habitat. The friable soils and vegetation present in the project area are typical of quality desert tortoise habitat. As shown in Table 2, 174 sign of desert tortoise including a live tortoise were observed in the project area during surveys. An additional 244 sign including four live tortoises were observed in the ZOI. A select sampling of photos of sign recorded can be seen in Appendix C. Locations of live desert tortoises, tortoise cover sites, tortoise carcasses, and tortoise scat are exhibited in Figures 2 - 7.

The documentation of numerous instances of sign in the area indicates that tortoises have and currently inhabit the area. When estimating tortoise density, the BLM uses total corrected sign (TCS) instead of actual number of sign. Using this methodology, two burrows and a piece of scat, for instance, all within the same area are only counted as one piece of TCS because it is likely that all of these sign are from the same individual tortoise. In this manner, tortoise densities are not exaggerated and should be more reflective of actual tortoise densities. Using field survey data for this project, it was determined that the action area contains a total of 418 TCS. This correlates to an average of 0.79 TCS per acre (418 TCS/526ac). Though portions of the project area contain suitable tortoise habitat, desert tortoise numbers are very low for the project area as a whole.

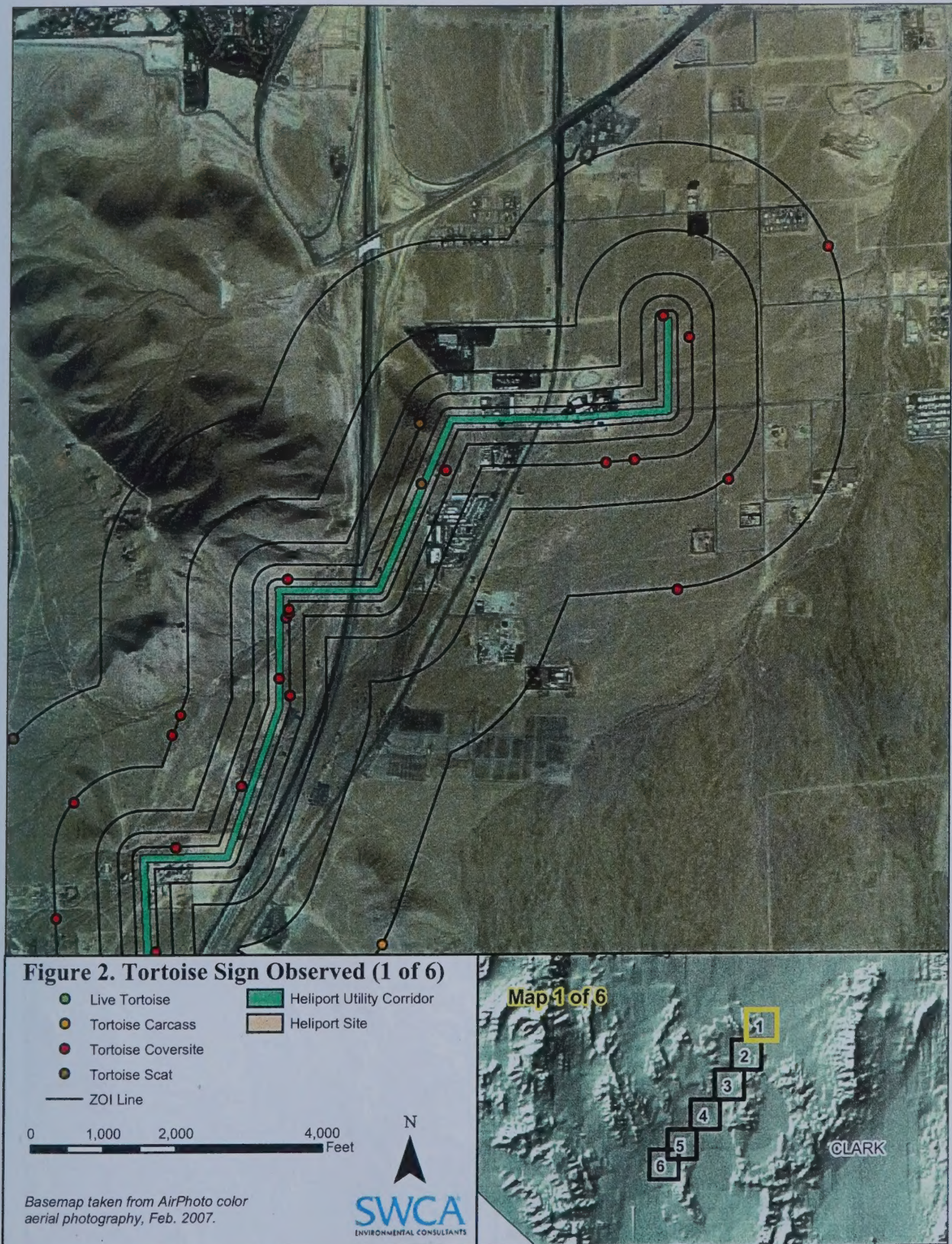
The relatively low density of tortoises observed for the action area likely means that there are many threats to tortoises in this area inhibiting the continuation of a successful population. Though some portions of the action area appeared undisturbed, some areas are highly disturbed and several threats were identified. A typical Mojave Desert raven population occurs at the site, which likely has an impact on immature desert tortoises. Several off-highway vehicle roads were noted throughout the action area, which likely lead to increased access for humans into undisturbed habitat and may result in sporadic instances of tortoise/vehicle collisions. A few high-traffic areas were characterized by large volumes of litter and frequent use by recreationalists. SWCA biologists observed people driving in the desert and using firearms on almost a daily basis. All of the tortoises observed during surveys appeared to be very healthy, showing no signs of URTD, infection, or other abnormalities.

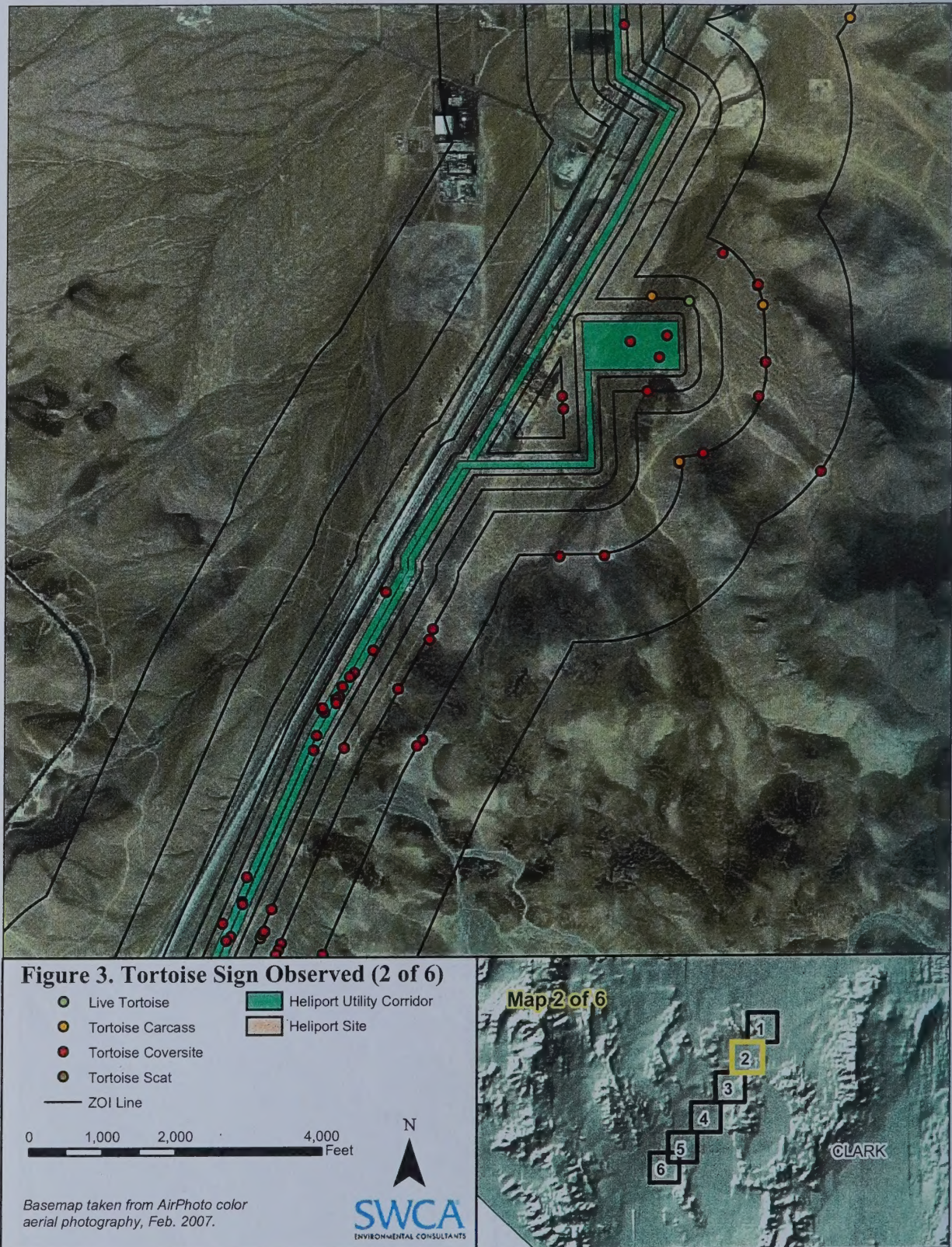
Table 2. Observed Sign within Project Action Area by Day

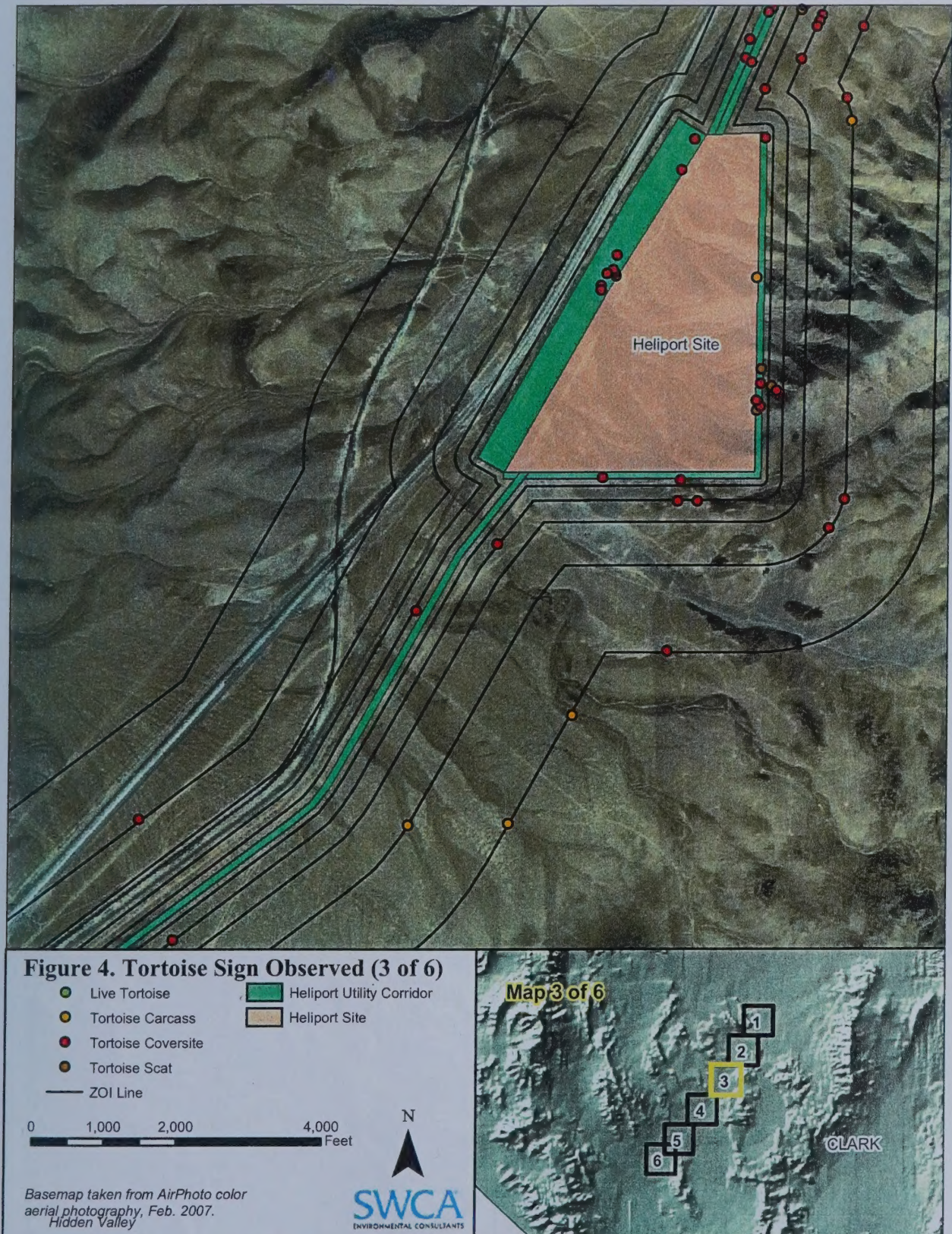
Survey Day	Sign Type					Total
	Live Tortoises	Tortoise Carcasses	Burrows	Scat	Other Sign	
2004 Survey*						
1 – 3	0	3	84	2	0	89
2006 Survey						
1	0	0	29	4	0	33
2	1	1	20	5	0	27
3	0	0	1	1	0	2
4 (ZOI)	0	1	9	2	0	12
5 (ZOI)	1	3	19	8	0	31
6 (ZOI)	0	0	25	8	0	33
7 (ZOI)	2	7	33	4	0	46
8 (ZOI)	0	2	69	19	0	90
9 (ZOI)	0	0	21	5	0	26
10 (ZOI)	1	0	5	0	0	6
11	0	1	17	5	0	23
Total Sign	5	18	332	63	0	418

Source: SWCA 2004 and 2006 Surveys

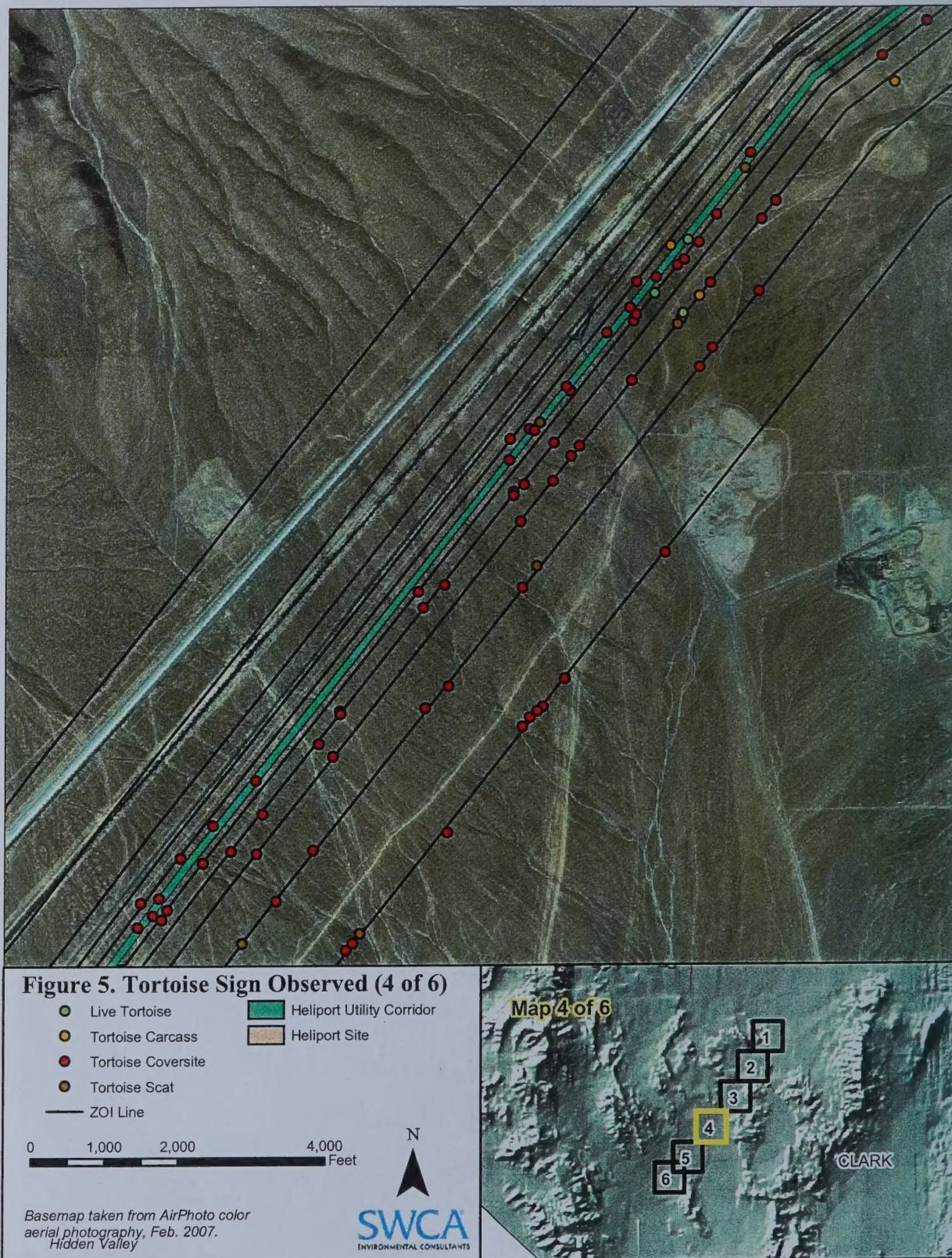
* GPS data for the project area from 2004 is not available. 2004 data is only available as hard copy data forms.







Note: 2004 sign data for the Heliport Site is not mapped; however, sign was observed and recorded.



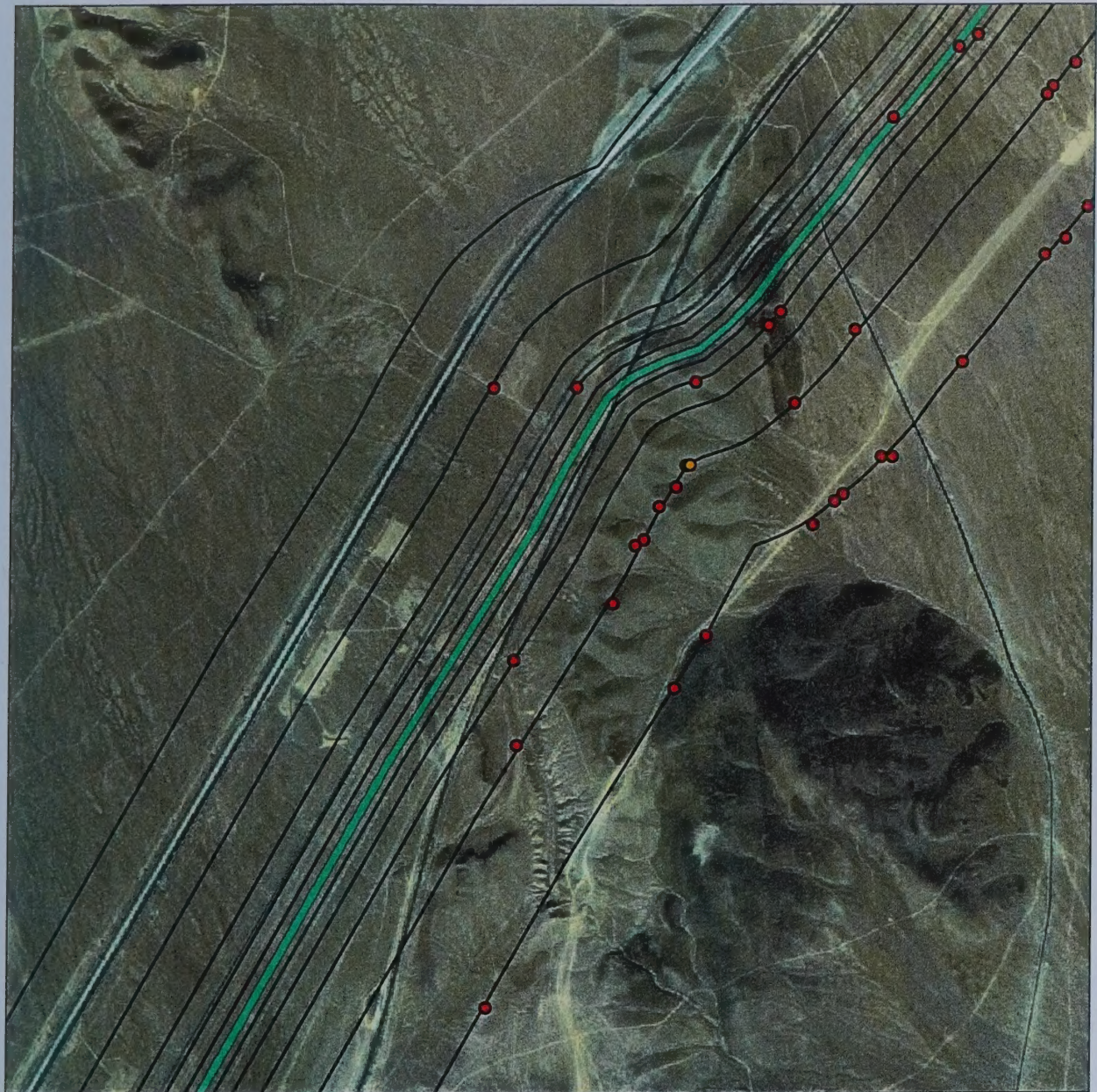


Figure 6. Tortoise Sign Observed (5 of 6)

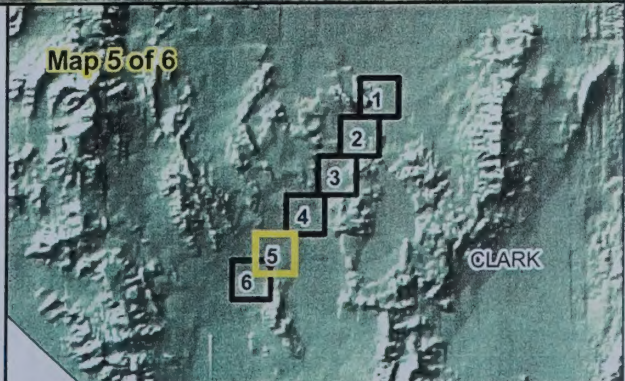
- Live Tortoise
- Tortoise Carcass
- Tortoise Coversite
- Tortoise Scat
- ZOI Line
- Heliport Utility Corridor
- Heliport Site

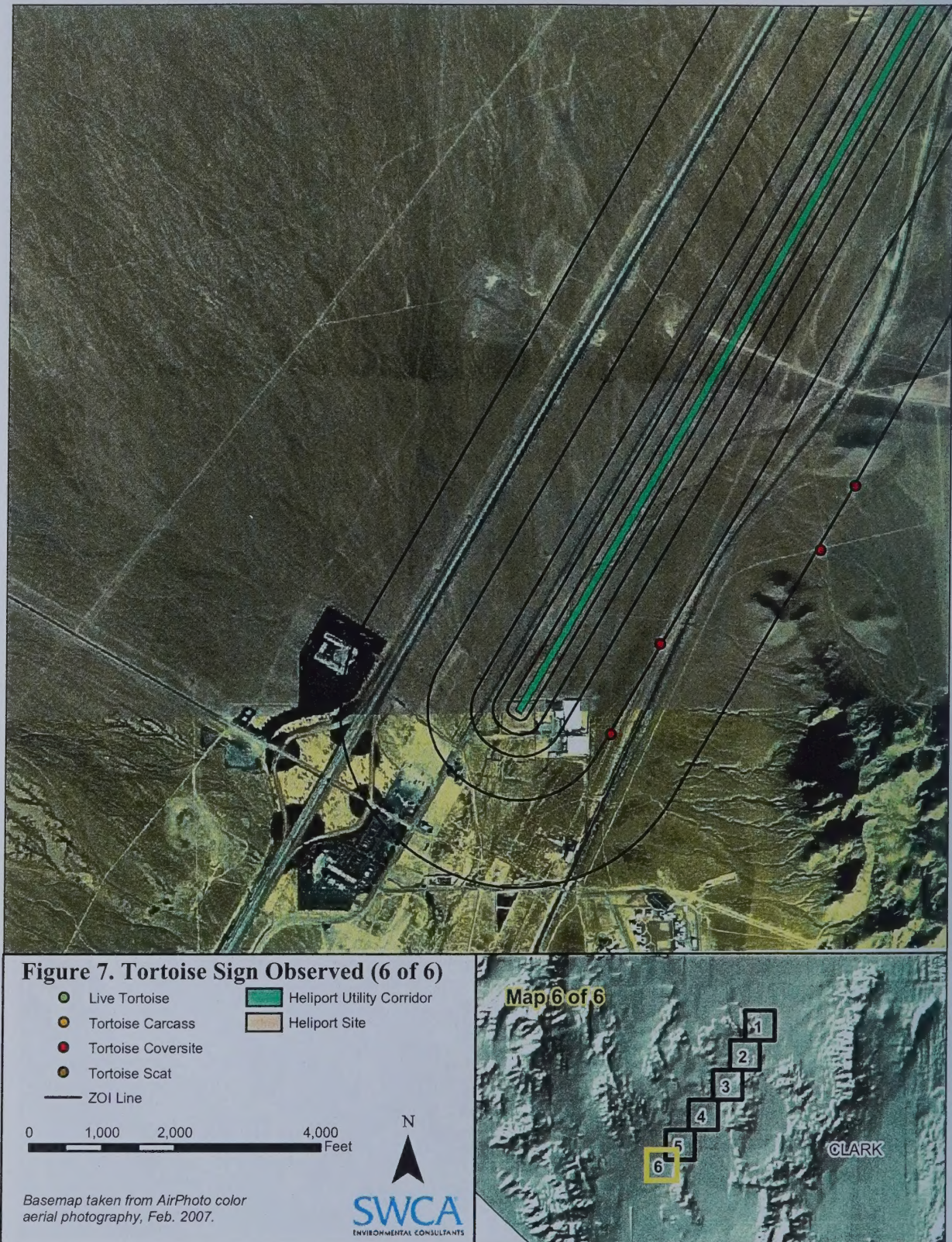
0 1,000 2,000 4,000 Feet



Basemap taken from AirPhoto color aerial photography, Feb. 2007.

SWCA
ENVIRONMENTAL CONSULTANTS





6.0 EFFECTS ANALYSIS FOR THE PROPOSED ACTION

DESERT TORTOISE

Development of the proposed Heliport at the South of Sloan site would result in the disturbance of approximately 526 acres of occupied and potential tortoise habitat. However, this makes up a very small percentage of the total desert tortoise habitat in southern Nevada and, therefore, the overall impact to the desert tortoise population is not anticipated to be substantial. Pre-construction clearance surveys and relocation of tortoises to nearby areas would reduce the number of direct take of individuals to the greatest extent practicable. However, it is assumed that a small number of tortoises would not be found during clearance surveys and they may be killed during construction of the project. Tortoise fencing around the heliport site would ensure relocated and nearby tortoises do not enter the heliport site following clearance and construction. The proposed project would also result in increased traffic to the area as more people utilize the heliport, leading to the potential for a small number of tortoises being crushed by vehicles. Additionally, increased human utilization of this area could lead to an increase in trash, which could consequently increase the raven population in the area and predation on tortoises. Indirect impacts may also occur from construction noise and increased vehicle noise. Tortoises near the project area may be temporarily displaced due to this increased disturbance. However, this would be a temporary impact, as these individuals would likely return to their original habitat shortly following groundbreaking activities. Overall, the project conservation measures would help reduce impacts to desert tortoise, but impacts would not be completely eliminated.

This project and most projects in southern Nevada occur in typical Mojave creosote bush habitat that supports or could support desert tortoise. Cumulative impacts to desert tortoise from this project and other reasonably foreseeable projects that occur in the area are potentially high. As growth in the area continues at high rates and associated recreation and other land uses continue to rise, desert tortoises are killed, the available habitat for desert tortoises is reduced, and indirect impacts from noise, pollution, and general ecosystem alteration increase. However, the Clark County Desert Conservation Plan includes provisions that have set aside several contiguous pieces of land outside of urban areas that are presumably large enough to sustain a healthy desert tortoise population in southern Nevada. Therefore, these cumulative impacts would not jeopardize the continued existence of the species.

Completion of the project would permanently remove up to 526 acres of occupied and potential tortoise habitat. Additionally, it is expected that the incidental take of a small number of tortoises would occur during construction of the project. However, potential tortoise habitat extends well beyond the boundaries of the project area and the project would only result in a very small reduction in overall habitat for the population. Additionally, the tortoise population within and near the project site appears to be healthy and any incidental take would likely not reduce the population numbers to unrecoverable levels.

7.0 CONCLUSIONS AND DETERMINATIONS

Evaluation of the potential to affect listed species or their habitat in a Biological Assessment can result in three possible outcomes: “No effect, Is not likely to adversely affect, and Is likely to adversely affect” (USFWS 1998, section 3-12). The desert tortoise is the only federally listed species that occurs or has the potential to occur in the action area. The action area contains suitable desert tortoise habitat and the conservation measures implemented under the Proposed Action would largely reduce, but not eliminate impacts to desert tortoise. Therefore, completion of this project *is likely to adversely affect* the desert tortoise, but would not jeopardize the continued existence of the species. The desert tortoise would be adversely affected through the loss of occupied and potential habitat and could be potentially adversely affected through crushing of individuals. The Proposed Action would have *no effect* on the 16 other Clark County federally protected species, because there is no suitable habitat for these species within the proposed action area.

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APPENDIX A. STATE OF NEVADA AND BLM SENSITIVE SPECIES REVIEW

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BLM SENSITIVE SPECIES

Although the USFWS does not require non-federally protected species to be addressed in a BA, SWCA decided that such species would be addressed for this BA, to better understand the biological resources in the action area. There are twelve BLM or Nevada State special status wildlife species that may occur in the survey area, including:

Mammals

- Desert Bighorn Sheep (*Ovis canadensis nelsoni*)

Reptiles

- Banded Gila Monster (*Heloderma suspectum cinctum*)
- Chuckwalla (*Sauromalus ater*)

Birds

- Western Burrowing Owl (*Athene cunicularia*)
- Loggerhead Shrike (*Lanius ludovicianus*)

Plants

- Las Vegas Bearpoppy (*Arctomecon californica*)
- Mojave Milkvetch (*Astragalus mohavensis* var. *mohavensis*)
- The Rosy Two-tone Beardtongue (*Penstemon bicolor* ssp. *roseus*)
- Sheep Fleabane (*Erigeron ovinus*)
- Spring Mountains Milkvetch (*Astragalus remotus*)
- White-margined Beardtongue (*Penstemon albomarginatus*)
- Yellow Two-tone Beardtongue (*Penstemon bicolor* ssp. *bicolor*)

MAMMALS***Bighorn Sheep***

Populations of desert bighorn sheep fell drastically with the European colonization of the American Southwest. However, federal protection and relocation programs have helped to increase populations of this species throughout the Southwest. In Nevada, populations have doubled or tripled since the 1960s (McCutchen 2006).

The desert bighorn sheep is a smaller subspecies of bighorn sheep and is suited for the harsh conditions of the desert. The desert bighorn sheep is a large, muscular ungulate with curled horns that can span over 30 inches in large males. Desert bighorn sheep typically inhabit mountain slopes and foothills characterized by exposed ridges, cliffs, and rock outcrops. In winter, bighorn sheep prefer lower slopes between 2,500 and 5,000 feet (762 and 1,524 m), and in the summer, they move to higher elevations between 6,000 and 8,500 feet (1,829 and 2,591 m).

The desert bighorn sheep is the only special status mammal species potentially occurring in the action area. The desert bighorn sheep is a BLM Special Status Species and is fully protected by the State of Nevada as a game species. This species was not identified by NNHP, but populations are known from the Sloan Canyon National Conservation Area (NCA), which borders the action

area. Desert bighorn sheep were not observed during surveys and potential habitat for the species is unlikely within the project area. However, bighorn scat and beds were observed on the eastern side of the action area adjacent to the Sloan Canyon NCA along the 300, 600, 1,200 and 2,400 foot ZOI transects. These areas are likely at the extreme edge of the known desert bighorn sheep habitat within the Sloan Canyon NCA.

REPTILES

Banded Gila Monster

The banded Gila monster is a BLM and Nevada State special status species. NNHP has not identified this species within the action area, but identifies that this species could be potentially observed. Banded Gila monsters live in Mojave Desert scrub with gravelly and sandy soils and is found below 5,000 feet (1524 m) in elevation. Banded Gila monster habitat is typically within canyon bottoms or arroyos with permanent or intermittent streams, near water or moist soils, below 5,000 feet (1,524 m) in elevation. In these areas, individuals are often found under rocks, in burrows of other animals, and in holes it digs itself. The Gila monster is diurnal, especially in the spring (Stebbins 1985).

Because there is no water or moist soil within the action area, the potential for Gila monsters to occur within the action area is negligible. No banded Gila monsters or their sign were observed during surveys. Because of their clandestine nature, few observations of Gila monster are ever made and little is known about their distribution in Clark County, Nevada.

Chuckwalla

The chuckwalla is a BLM special status species and has the potential to occur within the action area. Depending upon the population, the chuckwalla may exhibit a black head, forelegs, and upper trunk, and a reddish-yellow rear and tail. However, some individuals have been known to have a bright red body. They have a thick, blunt tail and grow up to 11-18 inches in length. The chuckwalla is a strict herbivore, eating fruits, leaves, buds, and flowers. These diurnal lizards emerge in the morning and, before seeking food, bask in the sun until they reach their optimum body temperature of 100-105 °F. When the chuckwalla senses danger, it quickly lodges itself between rocks and inflates its lungs, stretching the thick, sagging skin like a balloon. By doubling its size in tight spaces, the chuckwalla fills the space, rendering itself difficult to pull out by predators.

The chuckwalla prefers open flats and rocky areas, often near large rocks and boulders at elevations up to 4,500 feet (1,372 m). No chuckwallas were observed, but potential habitat occurs along the rugged slopes on the northeast side of the project area and throughout portions of the utility corridors.

BIRDS

Two State of Nevada and BLM special status avian species or their habitat were observed during field surveys. The loggerhead shrike and western burrowing owl are both found in open desert habitat. In addition to these specific species, all migratory birds are protected under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. 703 et seq.).

Western Burrowing Owl

The western burrowing owl is a BLM special status species and is fully protected by the State of Nevada. Burrowing owls seem to tolerate non-threatening human activity more than other owl species and can often be found at the margins of airports and golf courses and in vacant urban lots. While most owls are nocturnal, burrowing owls are diurnal, with most activity occurring at dusk and dawn. They are opportunistic feeders, mostly eating beetles, grasshoppers, and other large arthropods. Other, larger prey animals include mice, rats, gophers, reptiles, and amphibians. The burrowing owl hovers while hunting, and is almost silent when in flight.

Western burrowing owls are found in open, dry grass and shrublands and inhabit the abandoned, underground burrows of other animals, such as the desert tortoise. They can construct their own burrows, but usually prefer the deserted excavations of other animals. Burrowing owls are commonly seen perching on fenceposts or on top of the apron outside their burrows. Within the action area, burrowing owls were noted on several occasions and sign of this species, such as burrows and cough pellets, was observed during several days of surveying.

Loggerhead Shrike

The loggerhead shrike is listed as a BLM special status species and is fully protected by the State of Nevada. Adults are gray on top and white underneath, with black wings and a black mask extending from the beak to behind the eye. It also has a heavy hooked bill and an undulating flight with rapid wing beats. The loggerhead shrike is often confused with the mockingbird. It is known for impaling its insect prey on sharp objects, such as thorns or twigs; this may be a territorial gesture or a way of attracting mates.

The loggerhead shrike inhabits Joshua tree woodlands and creosote scrub communities, which are found within the action area. This bird is most commonly seen perched on treetops in the open country of the western U.S. and was noted during several days of surveys in the action area.

PLANTS

The NNHP identified five BLM special status plant species within three kilometers of the project area: the rosy two-tone beardtongue, sheep fleabane, Spring Mountains milkvetch, white-margined beardtongue, and yellow two-tone beardtongue. In addition, the Las Vegas bearpoppy and the Mojave milkvetch have potential to occur in the project area, but have never previously been recorded.

Las Vegas Bearpoppy

All known species of this distinctive genus of the poppy family are endemic to the northern Mojave Desert. In 1992, Las Vegas bearpoppy was reported to occur in approximately 52 populations in Clark County, Nevada, and at five sites in Mohave County, Arizona, between 1,060 and 3,150 feet (320 and 960 m) in elevation. Approximately 9 (17%) of the 52 Nevada populations were presumed extirpated due to urban expansion in the west half of the species' range in Las Vegas Valley. Because of these severe impacts, the species was originally listed as a category-2 candidate for listing under the ESA, a listing that requires more information before a decision is made. The species was also placed on the Nevada list of critically endangered

species. The Las Vegas bearpoppy is currently listed as a BLM special status species. The species is also fully protected by the State of Nevada as a critically endangered species.

Aerial and ground surveys were conducted in southern Nevada during summer 1994 to relocate historical populations, discover any additional populations, and document their biology, ecology, and conservation status (Mistretta et al. 1996) and in 1996 the MSHCP documented 108 populations in the area (RECON 2000). This species is most commonly found on gypsiferous soils associated with Mojave Desert scrub. However, no gypsum soils were observed during field surveys.

Mojave Milkvetch

The Mojave milkvetch is protected as a BLM special status species. Location data for the Mojave milkvetch is largely incomplete. As of 2001, the Mojave milkvetch was known to occur in 19 different locations in Clark and Nye Counties, Nevada, and from several locations in California. This species is thought to occur between 2,640 feet (805 m) and 5,577 feet (1,700 m) (Morefield 2001). Though this species is not known to occur near the action area, the NNHP has identified the project area as containing potential habitat for the Mojave milkvetch.

Rosy Two-tone Beardtongue

The rosy two-tone beardtongue is listed as a BLM special status species. This species is an herbaceous, short-lived perennial with thick stems that grows up to 47 inches (120 cm) tall. The leaves are opposite, simple, waxy, grayish, and irregularly toothed. The flowers are of a rosy color and have a staminode longer than the corolla throat, which is bearded with yellow hairs.

The rosy two-tone beardtongue typically occurs in gravelly washes or highly disturbed areas receiving enhanced runoff at elevations between 1,800 and 4,840 feet (550 and 1475 m). The NNHP identified rosy two-tone beardtongue as being present within one mile of the project area. Suitable habitat for the rosy two-tone beardtongue is present throughout the project area and while several *Penstemon* plants were noted during field surveys, the species cannot be determined outside of the flowering season.

Sheep Fleabane

Sheep fleabane is protected as a BLM special status species. According to NNHP, this species was observed in the project area in 1892. However the current range of this species is only known to cover the Sheep and Groom Ranges of Nevada with only 15 known occurrences. The sheep fleabane is a perennial herb growing from 2-6 inches (5-15 cm) in height.

The sheep fleabane is most commonly found on limestone cliffs and rock outcrops from 3,600-8,400 feet (1,095-2,560 m). While the action area rises to within this elevation range, the project area falls completely below 3,600 feet (1,095 m); therefore, no habitat for the sheep fleabane occurs within the project area.

Spring Mountains Milkvetch

The Spring Mountains milkvetch is protected as a BLM special status species and has been identified as occurring within one mile of the project area. However, this species has long been

accepted as endemic to the Spring Mountains, specifically the Red Rock Canyon National Recreation Area. Therefore, the validity of this location point is in question.

The Spring Mountains milkvetch prefers rocky hillsides and canyon banks on gravelly sandstone or limestone soils and typically occurs from 5,600-7,050 feet (1,707-2,149 m) (SWCA 2005). The project area does not fall within this elevation range, which leads to further questioning of this species occurring in the project area.

White-margined Beardtongue

The white-margined beardtongue is protected as a BLM special status species and has been identified as occurring within one mile of the project area. This species is known to occur in 15 distinct populations near Hidden Valley, Jean Lake, and Roach Lake, Nevada. The white-margined beardtongue typically occurs from 1,500-3,600 feet (455-1,095 m) on dry lakebeds and in washes that lead to these lakes (RECON 2000).

The project area is situated just west of Hidden Valley and Jean Lake and several washes traverse the utility corridor on their way to Jean Lake. The project area seems to contain ample habitat for the white-margined beardtongue. Several *Penstemon* plants were noted during field surveys, but the species couldn't be determined outside of the flowering season.

Yellow Two-tone Beardtongue

The yellow two-tone beardtongue is listed as a BLM special status species. The yellow two-tone beardtongue is a perennial herb found in shallow gravelly washes, roadsides and cliffs above steeper washes between 1,970 and 5,480 feet (600 and 1,670 m) (SWCA 2005). This species is often associated with creosote bush and Joshua tree. In a vegetative state, this species looks identical to the rosy two-tone beardtongue.

The NNHP identified yellow two-tone beardtongue as being present within one mile of the project area. Suitable habitat for the yellow two-tone beardtongue is present throughout the project area and while several *Penstemon* plants were noted during field surveys, the species cannot be determined outside of the flowering season.

EFFECTS

Desert bighorn sheep were not observed and do not likely occur within the project area, and direct impacts are not anticipated. Desert bighorn sheep are not federally listed as endangered species in Nevada. Two specific population segments of desert bighorn sheep (*Ovis Canadensis* and *Ovis canadensis californiana*) (USFWS 1998a, 2000) are listed by the U.S. Fish and Wildlife Service as endangered in California; however, this designation does not apply to the bighorn sheep in the study area for this project.

The legislation for the transfer of the South of Sloan land (Transportation et al. 2005) makes specific requirements of the for-profit helicopter air tour flights that leave from or return to a heliport on this parcel and are flown through the Sloan Canyon NCA. One requirement is that the helicopters be flown along a defined 2-mile-wide corridor through the Sloan Canyon NCA; this defined corridor avoids the highest ridges in the NCA and big game guzzler (i.e. water catchment) locations. Another requirement is that the helicopters be flown at a minimum

altitude of between 500 feet and 1,000 feet (152 and 305 m) above ground level for operations on the western border and eastern border of the Sloan Canyon NCA, respectively. Flights occurring outside of the NCA do not have to meet these requirements. A practice that is common-place for the operators today, and is that is anticipated to continue, is for the helicopter pilot to maintain a minimum altitude of 500 feet above the ground.

It is expected that up to 160 daily helicopter operations to and from the Grand Canyon may occur through the Sloan Canyon NCA in 2011. This number is anticipated to increase to up to 200 daily helicopter operations in 2017. However, because helicopter operations would be voluntarily confined to narrow flight corridors through potential bighorn sheep habitat in the Sloan Canyon NCA, the potential areas of disturbance would be limited and the duration of potential disturbance would be brief. Based on these factors and the Sloan Canyon NCA helicopter flight restrictions, overflights of helicopters through the Sloan Canyon NCA and project area are not expected to have significant impacts on bighorn sheep. Therefore, it is not anticipated that the Proposed Action would substantially impact the desert bighorn sheep.

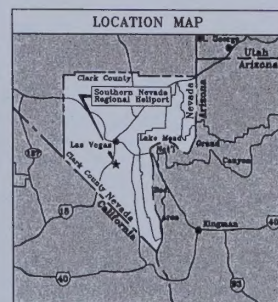
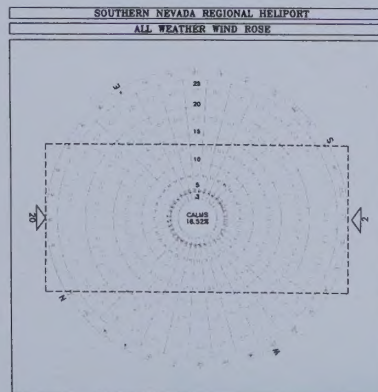
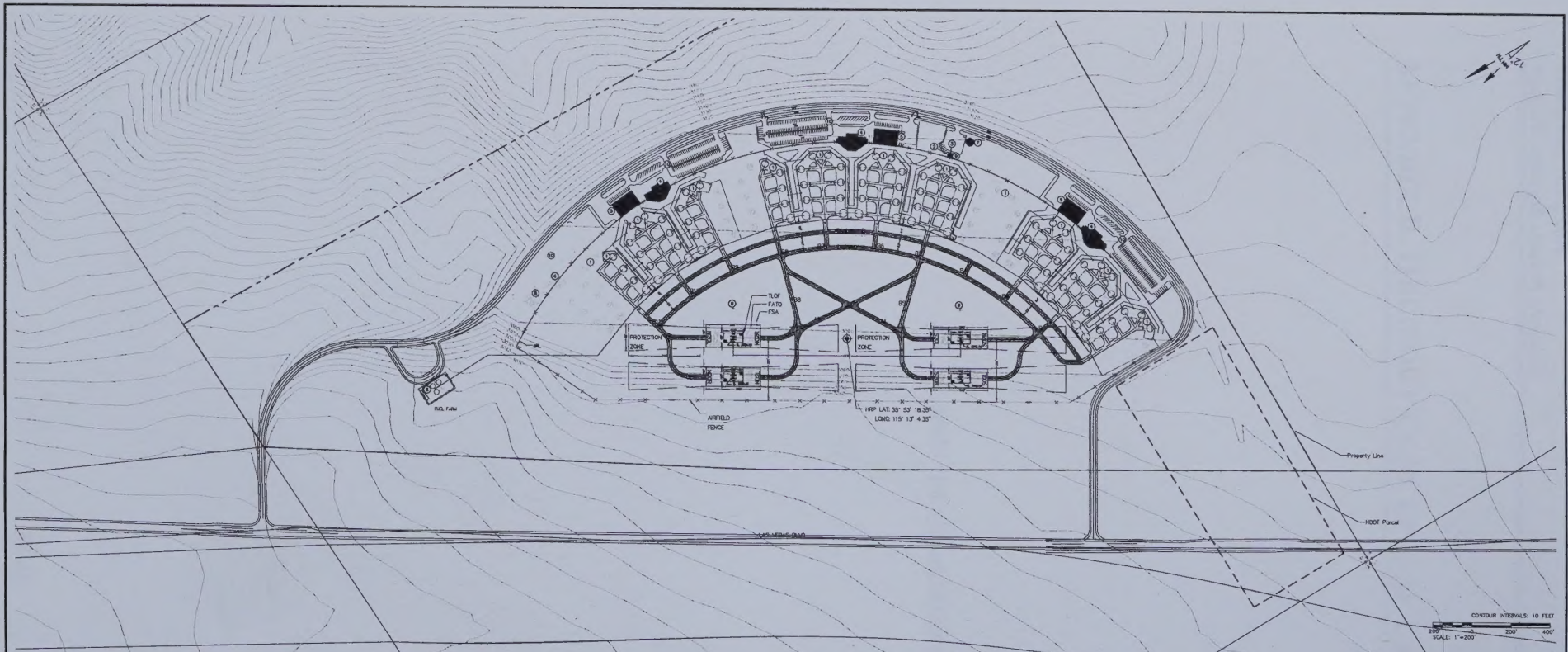
No individual banded Gila monsters were observed and suitable habitat was not identified in the action area. Therefore, the Proposed Action would have no impact on the banded Gila Monster. Chuckwallas were not observed in the action area, but potential habitat for the species was observed. There is the potential for individuals to be crushed during construction, which would be an adverse impact to chuckwalla, but it is assumed that chuckwalla would move from the area during construction and only temporary, minor impacts from displacement would occur. Additionally, the best quality chuckwalla habitat occurred in the action area, outside of the project area, which means direct impacts from the Proposed Action are unlikely. It is not anticipated that the Proposed Action would have a substantial impact on the chuckwalla.

Within the action area, there is ample nesting and foraging habitat for the BLM and state of Nevada special status avian species, including the western burrowing owl and the loggerhead shrike, which occupy open desert habitat. Both the western burrowing owl and the loggerhead shrike were seen during surveys of the action area. The proposed developments could affect nesting or foraging habitat throughout the action area. However, if groundbreaking activities are completed outside of the nesting season (February to August), impacts could be diminished. Additionally it is not anticipated that mobile species such as migratory birds would be directly taken during construction activities. Therefore, it is not anticipated that the Proposed Action would have a substantial impact on these Nevada or BLM sensitive species.

Because the project area does not contain appropriate habitat for the Las Vegas bearpoppy, sheep fleabane or Spring Mountains milkvetch, the Proposed Action would have no impact on these species. The project area does contain suitable habitat for the Mojave milkvetch, rosy two-tone beardtongue, white-margined beardtongue and yellow two-tone beardtongue. While none of these species were positively identified during field surveys, several plants of the *Penstemon* genus were observed. Additional field surveys for these sensitive species prior to groundbreaking activities would determine if the Proposed Action would impact these species. Presently it is anticipated that the Proposed Action would not have a substantial impact on these BLM special status species, based on field surveys not identifying these species in the project area. If sensitive *Penstemon* species are identified within the project area impacts should be reassessed.

APPENDIX B. HELIPORT CONCEPTUAL LAYOUT

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FATO END COORDINATES (N.A.D. 83 DATUM)		
FATO	EXISTING	FUTURE
NORTH 20L	N/A	LAT. 35° 53' 24.50" LONG15° 13' 59.82"
NORTH 02R	N/A	LAT. 35° 53' 22.13" LONG15° 13' 1.57"
SOUTH 20L	N/A	LAT. 35° 53' 14.58" LONG15° 13' 7.14"
SOUTH 02R	N/A	LAT. 35° 53' 12.20" LONG15° 13' 8.89"
NORTH 20R	N/A	LAT. 35° 53' 25.71" LONG15° 13' 1.80"
NORTH 02L	N/A	LAT. 35° 53' 23.15" LONG15° 13' 3.65"
SOUTH 20R	N/A	LAT. 35° 53' 15.58" LONG15° 13' 9.22"
SOUTH 02L	N/A	LAT. 35° 53' 13.22" LONG15° 13' 10.93"

FATO DATA				
	NORTH		SOUTH	
	EXISTING	FUTURE	EXISTING	FUTURE
TLO MDL AND LENGTH	N/A	50' x 100'	50' x 100'	
FATO WIDTH AND LENGTH	N/A	100' x 280'	N/A	100' x 280'
FSR WIDTH AND LENGTH	N/A	160' x 340'	N/A	160' x 340'
EFFECTIVE GRADIENT IN %	N/A	0.0	N/A	0.0
8" WIND COVERAGE (3 KNOTS)	N/A	97-30%	N/A	97-30%
PAVEMENT MATERIAL	N/A	PCB	N/A	PCC
PAVEMENT STRENGTH (LBS)	N/A	11,000	N/A	11,000
FATO LIGHTING	N/A	TRANSPO	N/A	TRANSPO
FATO MARKING	N/A	TRANSPO	N/A	TRANSPO
TAXI ROUTE WIDTHS	N/A	20'	N/A	20'
TAXIWAY SURFACE TYPE	N/A	ASPHALT	N/A	ASPHALT
TYPE APPROACH	N/A	VISUAL	N/A	VISUAL
APPROACH SURFACE	N/A	8.1	N/A	8.1
TRANSITIONAL SURFACE	N/A	2.1	N/A	2.1
DESIGN AIRCRAFT	N/A	EC 135	N/A	EC 135

TLO = TOUCHDOWN AND LIFT-OFF AREA, FATO = FINAL APPROACH AND TAKEOFF AREA, FSA = FATO SAFETY AREA
 MD: MINORISAL DIRECTION SURFACE OBJECT FREE ZONE

FATO ELEVATION DATA (N.A.V.D. 88 DATUM)					
NORTH FATO#			SOUTH FATO#		
LOCATION	EXISTING (MSL)	FUTURE	LOCATION	EXISTING (MSL)	FUTURE
02R-20L	N/A	3082.53'	02R-20L	N/A	3090.03'
02L-20R	N/A	3078.53'	02L-20R	N/A	3086.03'

FATO SAFETY AREA (FSA)						
	FEE SIMPLE	PROPERTY TYPE (ACRES) ±				TOTAL ACRES
		EASEMENT		NON-EASEMENT		
		PRIVATE	BLM	PRIVATE	BLM	
NORTH FSAS	2.5	--	--	--	--	2.5
SOUTH FSAS	2.5	--	--	--	--	2.5

F.A.R. PART 77 DATA		
IMAGINARY SURFACE	SLOPE	HORIZONTAL DISTANCE
PRIMARY	0	TOLF AREA
APPROACH	8:1	4000
TRANSITIONAL	2:1	350

HELIPORT DATA		
	EXISTING	FUTURE
HELIPORT ELEVATION (N.A.S.D. 88)	N/A	3080.03' WSL
HELIPORT REFERENCE POINT (HRP) COORDINATES (N.A.S. 43 DATUM)		LAT 35° 53' 43.18" LONG 115° 13' 4.4"
MEAN MAX. TEMPERATURE OF HOTTEST MONTH		104° F (JULY)
HELIPORT AND TERMINAL NAVIGATION AIDS	N/A	BEACON, LIGHTS WIND INDICATOR, PATO, TLOF, AND TOWER LIGHTS
HELIPORT AREA (ACRES)	N/A	228

LEGEND		
EXISTING	FUTURE	DESCRIPTION
N/A		STRUCTURE
N/A		FATO PAVEDKIT
N/A		TAXI ROUTE PAVEMENT
N/A		ROADWAY/APRON
N/A		TAXI ROUTE
N/A		BUILDING RESTRICTION LINE
N/A		RAILWAY
N/A		FENCE
N/A		TRENCH DRAINAGE
N/A		FUEL DISTRIBUTION LINE
N/A		TAXI ROUTE CENTERLINE
N/A		TLOF
N/A		FATO
N/A		SAFETY AREA
N/A		PROTECTION ZONE
N/A		WIND INDICATOR
N/A		HELIPORT REFERENCE POINT
N/A		CONTOUR LINE
N/A		HELIPORT PROPERTY LINE

BUILDING & FACILITY INVENTORY	
FUTURE ☐	EXPANSION ☐
(1) TENANT / FLOORPLAN APPROX	(12) TENANT / FLOORPLAN APPROX
(2) ADMINISTRATION OFFICE	
(3) DISPATCH OFFICE	
(4) OPERATOR TERMINAL	(24) OPERATOR TERMINAL
(5) HANGAR	(25) HANGAR
(6) FUEL TANK	
(7) FUEL STORAGE TANK	
(8) BRIS STOPS	
(9) HELIPORT BEACON	
(10) AUTOMOBILE PARKING (TERMINAL AREA)	(26) AUTOMOBILE PARKING (TERMINAL AREA)

NO.	REVISIONS	BY	APPROVAL	FAA APPROVAL STAMP
1				NOT FAA APPROVED REVIEW COPY
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*Revised by: _____ Date: _____ _____ Assistant Planner, Department of Aviation				
DEPARTMENT OF AVIATION CLARK COUNTY, NEVADA SOUTHERN NEVADA REGIONAL HELIPORT South of Sloan, Nevada CONCEPTUAL HELIPORT LAYOUT DRAWING				
July 2007				
DRAWN BY: 07/23/07 CHECKED BY:				
DRAWING NO. SKR1-JLP-334JUL2007 DWG. SHEET 1 OF 1				

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APPENDIX C. DESERT TORTOISE SIGN PHOTOS

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10-30-06 Carcass52



10-31-06 Tortoise 55A



11-02-06 Carcass69



11-02-06 Carcass79



10-31-06 Burrow117



11-02-06 Burrow70C



11-02-06 Burrow71



11-03-06 Burrow91



11-03-06 Burrow92D



11-03-06 Burrow95



11-03-06 Burrow97A, Scat97B



11-06-06 Burrow321A

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Nevada Fish and Wildlife Office

4701 North Torrey Pines Drive

Las Vegas, Nevada 89130

Ph: (702) 515-5230 ~ Fax: (702) 515-5231



Date: July 1, 2008

File No. 84320-2008-F-0005

Mr. David B. Kessler, AICP
Regional Environmental Protection Specialist
Federal Aviation Administration
Post Office Box 92007
Los Angeles, California 90009-2007

Dear Mr. Kessler:

Subject: Biological Opinion for the Proposed Southern Nevada Regional Heliport,
Clark County, Nevada

On August 10, 2007, the Fish and Wildlife Service (Service) received your biological assessment (BA) and letter requesting initiation of consultation under section 7 of the Endangered Species Act of 1973, as amended (Act), for the Federal Aviation Administration's (FAA) proposed approval of an application submitted by the Clark County Department of Aviation (CCDOA) for Federal assistance under the Airport Improvement Program, approval of CCDOA's heliport layout plan, and construction of a regional heliport. In addition, the Bureau of Land Management (BLM) is proposing to transfer land ownership of the proposed heliport site to Clark County and issue rights of way (ROW) grants to various utility companies for utilities associated with the heliport. The FAA is acting as the lead agency for this consultation.

You requested formal consultation for adverse effects on the desert tortoise (*Gopherus agassizii*), (Mojave population) a species listed as threatened under the Act that may result from authorization of the proposed project. Critical habitat for the desert tortoise has been designated in portions of the Piute and Eldorado valleys, Mormon Mesa, Gold Butte, and Beaver Dam Slope areas of Nevada. The proposed project would not result in disturbance of designated critical habitat. Upon receipt of your August 10 request, we determined that additional information was necessary to initiate formal consultation as requested. Subsequently, we received the requested information on January 28 and March 7, 2008. Formal consultation was initiated on March 7, 2008.

Our biological opinion is issued in accordance with section 7 of the Act and based on information provided in your BA dated July 2007 (SWCA Environmental Consultants 2007) and subsequent correspondence, discussions with BLM staff, and our files. A complete

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administrative record of this consultation is on file in the Service's Nevada Fish and Wildlife Office in Las Vegas.

Consultation History

On August 15, 2007, we received your letter dated August 10, 2007, transmitting the BA and your request to initiate formal consultation on the proposed Southern Nevada Heliport project.

On August 23, 2007, we emailed you a list of requested clarifications and additional information needs to supplement the information provided in the BA. This request was subsequently provided to you in our letter dated October 18, 2007, with a statement that we shall initiate formal consultation upon receipt of the requested information.

On January 28, 2008, we received a letter from the FAA dated January 22, 2008, providing additional information on the subject project.

On March 7, 2008, we received an email correspondence from the FAA providing additional information on the subject project.

In our correspondence dated April 11, 2008, we acknowledged receipt of the additional information. On March 7, 2008, we initiated formal consultation on the subject project.

BIOLOGICAL OPINION

I. Description of the Proposed Action

A. Proposed Action and Action Area

The FAA proposes to approve the location and construction of a regional heliport, approve the layout plan for the heliport, and approve an application from CCDOA for Federal funding to construct the heliport. Other Federal actions related to the proposed project include BLM's proposed approval of a 229-acre Federal land transfer to Clark County, and ROW grants to various utility companies for the installation of utilities to serve the heliport.

Major features of the proposed project include:

- Site preparation, grading, and drainage of a portion of the 229-acre site for the new heliport;
- Installation of heliport edge and helicopter parking area lighting;
- Paving, marking, and lighting of the Final Approach and Takeoff areas, taxiways, and helicopter parking areas;
- Paving, marking, and lighting of an automobile access road, and parking areas;

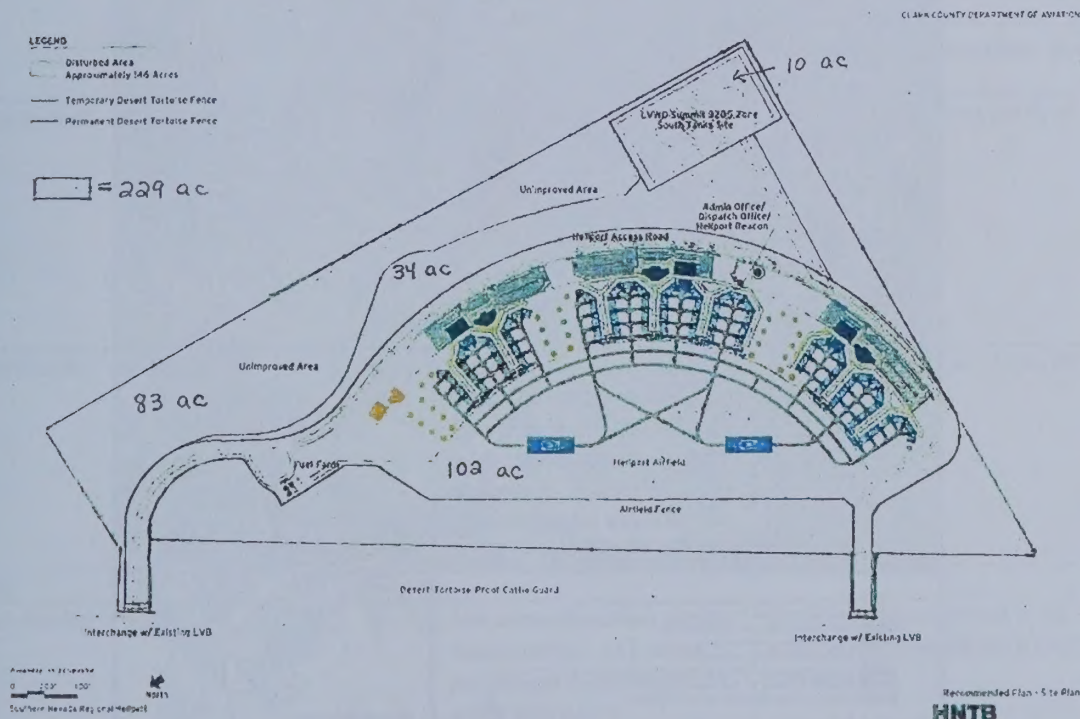
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- Construction of Helicopter Tour Operator facilities including helicopter hangars and other associated structures;
- Construction of a fuel farm; and
- Installation of utilities such as water, power, and communications lines.

The heliport would be constructed within the 229-acre parcel of land proposed to be transferred to Clark County (Figure 1). Permanent structures would be built on 112 acres, and another 34 acres would be temporarily disturbed from scrubbing (removal of vegetation) and grading to reduce erosion. Staging areas for equipment and materials during construction would occur within the 34-acre temporary use area. Approximately 83 acres of the 229-acre land transfer would not be disturbed by heliport construction activities.

Figure 1. Proposed site for the Southern Nevada Regional Heliport facility, Clark County, Nevada.



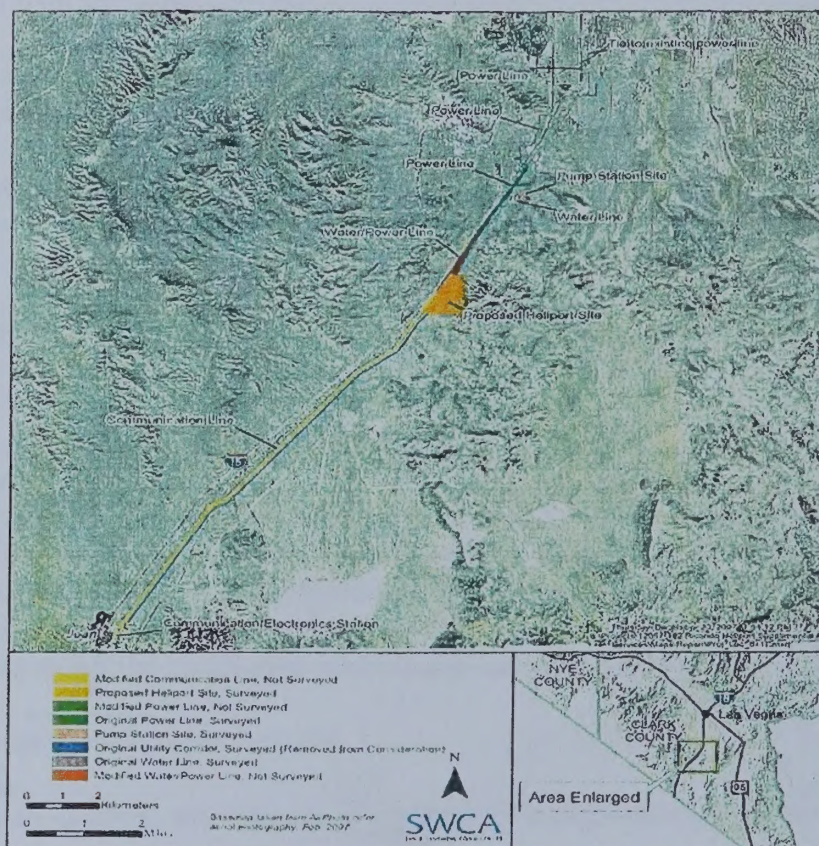
Utility improvements and construction would occur on BLM-administered land, with the exception of approximately 7 acres that occurs on CCDOA-owned property. A total of approximately 16 miles of utilities, including water, power, and communication lines, would be

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constructed to support operation of the heliport (Figure 2). Approximately 185 acres would be disturbed from utility improvements and construction (Table 1). Each utility would be required to apply to BLM for separate utility ROW, and BLM would be responsible for consulting with the Service under section 7 of the Act for each proposed right-of-way that crosses BLM-administered land. Effects to the desert tortoise from construction on Clark County property would be covered under the Clark County Multiple Species Habitat Conservation Plan (MSHCP), and CCDOA would be responsible for complying with the terms and conditions of the Incidental Take Permit (Permit) issued for the MSHCP.

Figure 2. Location of proposed utility lines to support operation of the Southern Nevada Regional Heliport, Clark County, Nevada.



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Table 1. Summary of temporary and permanent desert tortoise habitat loss associated with construction of the proposed heliport facility and related infrastructure.

Facility	Temporary Use (acres)	Permanent Use (acres)	Description	Location and ownership description
Pumping station	5	2	170 ft by 40 ft masonry building and underground piping	Within Las Vegas Valley Water District BLM ROW grant N-77754.
Water line	34 acres (7 = Clark County; 27 = BLM)	17	May be constructed under existing Las Vegas Blvd, but exact location to be determined by future design.	On CCDOA-owned property for 3,240 feet near pumping station then on BLM-managed land under existing Las Vegas Blvd for 11,760 feet.
New power line	36	18	Combination of above ground and below ground lines. Exact ratio is unknown until line design completed by Nevada Power. Would be covered under existing BLM programmatic BO.	Would tie in from an existing power line ending at the northern end of the GoKart site and extend approximately 14,300 feet adjacent to Las Vegas Blvd to the heliport site. Short segment needed along northern end of GoKart site to power pumping station. Length no greater than 1,500 feet.
Existing power line		28	Improvements to existing power line to increase capacity. Exact improvements unknown until line design completed by Nevada Power. Would be covered under existing BLM programmatic BO.	Existing power lines north of the GoKart site.
Communication line	110	59	Underground line. Exact location unknown until line design completed by telecommunication company. Would be covered under existing BLM programmatic BO.	Within existing Las Vegas Blvd ROW.
Subtotal	185	124		
Heliport facility	146	112	146 acres disturbed during construction. 112 acres permanent disturbance, 34 acres temporary disturbance. 83 acres undisturbed.	Total acreage of parcel to be transferred from BLM to CCDOA is 229 acres.
Total	331	236		

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B. Proposed Minimization Measures

FAA and the project proponent propose to minimize the effects of the proposed action on the desert tortoise by implementing the following measures:

1. A Worker Environmental Awareness Program (WEAP) would be implemented for construction crews prior to the commencement of groundbreaking/excavation activities. Training materials and briefings would include, but not be limited to, discussion of the Act, the consequences of noncompliance with the Act, identification and values of wildlife and natural plant communities, hazardous substance spill prevention and containment measures, and review of all required and recommended conservation measures.
2. As part of the WEAP, a desert tortoise education program would be presented to all personnel who will be on-site. All permittees and their employees would be informed, through the education program, of the occurrence of the desert tortoise in the project area and of the threatened status of the species. They would also be advised of the definition of "take," the potential impacts to the tortoise, and the potential penalties for taking a threatened species. All field personnel involved in the activities permitted herein would be educated about the desert tortoise and would be alert for the presence of wildlife, including desert tortoises. All informed persons would sign a statement indicating that they have completed the education program and understand fully its provisions.
3. Where feasible, the project area including utility corridors would be fenced with a temporary tortoise-proof fence prior to ground-disturbing activities. Fence design would be approved by BLM prior to construction and should include entrance/exit areas equipped with cattle guards or tortoise-proof gates. A qualified tortoise biologist would be on-site during fence installation to ensure that no tortoises are harmed.
4. In areas where tortoise-proof fencing is difficult to install or cost-prohibitive, qualified on-site biologists would monitor all construction vehicles and heavy machinery to ensure that no desert tortoises are harmed. The biologists would be responsible for moving tortoises out of harm's way if necessary, providing instruction as needed, and monitoring and reporting on compliance.
5. No more than 24 hours prior to commencement of surface-disturbing project activities (including tortoise-proof fencing) and 24 hours following fence installation activities, qualified biologists would do a 100 percent desert tortoise clearance survey of the entire project area. All tortoise burrows or other burrows that could be occupied by a tortoise would be searched for resident tortoises. If no tortoises are discovered inside the burrow, it would be collapsed or blocked to prevent tortoise re-entry. The entire project area would be searched three times unless no tortoises are seen during the second search. Any tortoises or eggs discovered would be excavated by hand to allow for safe removal. To

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avoid injury or death of desert tortoises, only authorized biologists may remove and handle tortoises or tortoise eggs.

6. Should a desert tortoise or a desert tortoise nest be encountered during construction, all construction activities in the area would stop and a qualified tortoise biologist would excavate nests and tortoises from the occupied area. All tortoises or eggs would be excavated by hand to allow for safe removal. To avoid injury or death of desert tortoises, only authorized biologists may remove and handle tortoises or tortoise eggs. Ground disturbance would not resume until approved by the BLM or Service Authorized Officer.
7. Any tortoises found on the property would be removed and released 300 to 1,000 feet outside of the boundary nearest the point of collection by qualified tortoise biologists. Prior to handling any tortoise, permits would be obtained from the appropriate State and Federal agencies and BLM protocol would be followed when handling and releasing desert tortoises or eggs. If removed from a burrow, the animal would be placed in the shade of a shrub, in an unoccupied burrow, similar to the hibernacula in which it was found, or in an artificially constructed burrow following BLM protocol. Tortoises would be placed on lands under the ownership of BLM unless written permission is granted by the private landowner. BLM land would not be slated for development in the near future to ensure the relocated tortoises would not need to be relocated again. Tortoises that cannot be appropriately relocated would be removed from the area and placed with the Desert Tortoise Conservation Center. Tortoises showing symptoms of Upper Respiratory Tract Disease (URTD) would be left in the wild after gathering BLM-specified data.
8. Weed monitoring would occur for species identified by the State of Nevada as well as for additional species specified by Clark County during a given year. Such species comprise the official list of weeds for which a county may cost-share funding for control and removal efforts. Should such species be found during monitoring, control and eradication efforts would be implemented following a *CCDOA-prepared, BLM-approved noxious weed plan*¹. Herbicides would not be used around the gravel pit unless approved in writing by BLM.
9. Clark County would implement a litter control program during construction activities that would include the use of covered, raven-proof trash receptacles, removal of trash from the construction-site to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility at the end of each work week. This effort would reduce the attractiveness of the area to opportunistic predators such as coyotes, kit foxes, and common ravens.
10. Within the project area, control erosion and runoff using Best Management Practices (BMP) as recommended by the FAA and BLM.

¹ At the request of FAA (Kessler email dated June 17, 2008), this measure was slightly modified from the original measure provided in the biological assessment.

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11. In order to minimize erosion and soil deposition outside of the project area, ephemeral washes within the project area would be avoided to the maximum extent practicable.
12. A maximum speed limit of 15 miles per hour would be maintained while traveling in areas of groundbreaking or excavation. This effort would reduce the potential for vehicle-wildlife related collisions.
13. Any fuel or hazardous waste leaks or spills would be contained immediately and cleaned up at the time of occurrence. Contaminated soil would be removed and disposed of at an appropriate facility.
14. Reclamation of the proposed project site and utility corridors would consist of sloping cut areas to 2.5:1 or 3:1. Compacted areas would be ripped and the area seeded with native seed. Any salvaged plants would also be used in reclamation.

Additional minimization measures proposed in FAA's letter dated January 22, 2008:

15. CCDOA would pay remuneration fees to compensate for the loss of desert tortoise habitat based on the projected amount of disturbed land, after receipt of the biological opinion and prior to any land transfer from BLM to CCDOA.
16. CCDOA would fence the entire construction area with temporary fencing. When all construction is complete, the temporary fence would be removed and CCDOA would install permanent fencing around the operations area, e.g., around the perimeter of the heliport facility, on the outside of the surrounding access road, and airfield fence and around the tank site.
17. FAA would ensure that CCDOA follows fence inspection procedures stipulated in the biological opinion as a condition of approval of the project.

II. Status of the Desert Tortoise Rangewide

A. Listing History

On August 20, 1980, the Service published a final rule listing the Beaver Dam Slope population of the desert tortoise in Utah as threatened (45 FR 55654). In the 1980 listing of the Beaver Dam Slope population, the Service concurrently designated 26 square miles of BLM-administered land in Utah as critical habitat. The reason for listing was population declines because of habitat deterioration and past over-collection. Major threats to the tortoise identified in the rule included habitat destruction through development, overgrazing, and geothermal development; collection for pets, malicious killing, road kills, and competition with grazing or feral animals.

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On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 FR 42270). On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). Reasons for the determination included significant population declines, loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Livestock grazing and off-highway vehicle (OHV) activity have degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence were illegal collection by humans for pets or consumption, upper respiratory tract disease (URTD), predation on juvenile desert tortoises by common ravens, coyotes (*Canis latrans*), and kit foxes (*Vulpes macrotis*), fire, and collisions with vehicles on paved and unpaved roads.

On February 8, 1994, the Service designated approximately 6.45 million acres of critical habitat for the Mojave population of the desert tortoise in portions of California (4.75 million acres), Nevada (1.22 million acres), Arizona (339 thousand acres), and Utah (129 thousand acres) (59 FR 5820-5846, also see corrections in 59 FR 9032-9036), which became effective on March 10, 1994.

B. Species Account

The desert tortoise is a large, herbivorous reptile found in portions of California, Arizona, Nevada, and Utah. It also occurs in Sonora and Sinaloa, Mexico. The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Sonoran Desert in California.

Desert tortoises reach 8 to 15 inches in carapace length and 4 to 6 inches in shell height. Hatchlings emerge from the eggs at about 2 inches in length. Adults have a domed carapace and relatively flat, unhinged plastron. Their shells are high-domed, and greenish-tan to dark brown in color with tan scute centers. Desert tortoises weigh 8 to 15 pounds when fully grown. The forelimbs have heavy, claw-like scales and are flattened for digging. Hind limbs are more stumpy and elephantine.

Optimal habitat for the desert tortoise has been characterized as creosote bush scrub in which precipitation ranges from 2 to 8 inches, where a diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner 1982, Turner and Brown 1982). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. Desert tortoises occur from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982).

Desert tortoises are most commonly found within the desert scrub vegetation type, primarily in creosote bush scrub. In addition, they occur in succulent scrub, cheesebush

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scrub, blackbrush scrub, hopsage scrub, shadscale scrub, microphyll woodland, Mojave saltbush-allscale scrub and scrub-steppe vegetation types of the desert and semidesert grassland complex (Service 1994). Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and overwintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, tortoises occur most commonly on gently sloping terrain with soils ranging from sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, tortoises can be found in steeper, rockier areas (Gardner and Brodie 2000).

The size of desert tortoise home ranges varies with respect to location and year. In the West Mojave Desert, Harless *et al.* (2007) estimated mean home ranges for male desert tortoises to be 111 acres and 40 acres for females. Over its lifetime, each desert tortoise may require more than 1.5 square miles of habitat and make forays of more than 7 miles at a time (Berry 1986). In drought years, the ability of tortoises to drink while surface water is available following rains may be crucial for tortoise survival. During droughts, tortoises forage over larger areas, increasing the likelihood of encounters with sources of injury or mortality including humans and other predators.

Desert tortoises are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rainstorms. Desert tortoises spend most of the remainder of the year in burrows, escaping the extreme conditions of the desert. However, desert tortoises may be aboveground any month of the year. In most of its range, the desert tortoise is most active from approximately March 1 through October 31.

Tortoise activity patterns are primarily controlled by ambient temperature and precipitation (Nagy and Medica 1986, Zimmerman *et al.* 1994). Desert tortoises are active for approximately 6 weeks to 5 months of the year, depending on annual variations of temperature and rainfall. Deserts are characterized by prolonged periods of barely measurable rainfall. In much of the winter-rainfall Mojave Desert, droughts of 8 months or more occur regularly. At such times, the desert is virtually devoid of food for tortoises except for cacti and dried grasses (Oftedal 2002). In the East Mojave and Colorado Deserts, annual precipitation occurs in both summer and winter, providing food and water to tortoises throughout much of the summer and fall. Most precipitation occurs in winter in the West Mojave Desert resulting in an abundance of annual spring vegetation, which dries up by late May or June. Tortoises in the West Mojave are primarily active in May and June, with a secondary activity period from September through October.

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Tortoises may also be active during periods of mild or rainy weather in summer and winter. During inactive periods, tortoises rest in subterranean burrows or caliche caves, and spend approximately 98 percent of the time in these shelter sites (Nagy and Medica 1986). During active periods, they usually spend nights and the hotter part of the day in their burrow; they may also rest under shrubs or in shallow burrows (pallets). Tortoises may use an average of 7 to 12 burrows at any given time (Barrett 1990, Bulova 1994, TRW Environmental Safety Systems Inc. 1997).

Walde *et al.* (2003) observed that desert tortoises retreated into burrows when air temperature reached $91.0^{\circ}\text{F} \pm 3.55^{\circ}\text{F}$ and ground temperatures reached $94.6^{\circ}\text{F} \pm 6.05^{\circ}\text{F}$; 95 percent of desert tortoise observations of desert tortoises above ground occurred at air temperature less than 91°F . The body temperature at which desert tortoises become incapacitated ranges from 101.5°F to 113.2°F (Naegle 1976, Zimmerman *et al.* 1994).

Desert tortoise research in the Mojave Desert has identified nutritional constraints that may limit utilization of potential food plants. The kidney structure of the desert tortoise cannot concentrate electrolytes such as potassium as does the mammalian kidney (Maloiy 1979). Thus, the desert tortoise must rely on urine to excrete potassium resulting in more water loss in urine than it obtains in its food (Ofstedal 2002). Tortoises produce uric acid as a normal end product of protein metabolism. However, when tortoises ingest high levels of potassium without an increase in protein intake, both the amounts of urate precipitated in the bladder and the concentration of potassium in these precipitates increase (Ofstedal 2002). Because urates contain approximately 30 percent nitrogen, a critical side effect of urate production is the removal of nitrogen from the body.

The amount of nitrogen excreted in urates increase dramatically as dietary potassium levels increase, with the net effect that animals on high potassium intake cannot retain nitrogen for growth even though the protein level is high. The amount of potassium that could potentially be excreted, potassium excretion potential (PEP), can be estimated based on the amount of water and nitrogen in the food, compared with the amount of potassium in the food (Ofstedal 2002). A positive PEP index indicates there is more water and nitrogen in the food than is needed to excrete potassium whereas a negative PEP index indicates there is insufficient water and nitrogen in the food to excrete the potassium. Physiological responses of desert plants to low soil moisture appear to result in plants with a low PEP index that are poor food for tortoises. If high PEP index plants only germinate and grow in wet years, selective foraging by desert tortoises during these times may provide the greatest nutrition. Thus, nutritional status of wild tortoises may depend more on availability of plant species of high nutritional quality than on overall amounts of annual vegetation (Ofstedal 2002).

Although desert tortoises eat alien plants, they generally prefer native forbs when available (Jennings 1993, Avery 1998). Consumption of alien plants may place them at a

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nitrogen and water deficit (Henen 1997). Droughts frequently occur in the desert, resulting in extended periods of low water availability. Periods of extended drought place tortoises at even greater water and nitrogen deficit than during moderate or high rainfall years (Peterson 1996, Henen 1997). During a drought, more nitrogen than normal is required to excrete nitrogenous wastes, thus more rapidly depleting nitrogen stored in body tissues. Plants also play important roles in stabilizing soil and providing cover for protection from predators and heat.

Tortoises primarily eat annual herbs in the spring and switch to grasses, perennial succulents (cacti), and dried annuals later in spring and early summer (Avery 1998). Succulent green forage of spring is essential to the growth, reproduction, and survivorship of the desert tortoise. Growth of individual tortoises is directly correlated to the amount and quality of forage available in any given spring. The size and number of egg clutches correlates with the quality and quantity of the spring diet. If spring forage is not available, the opportunity for the tortoise to meet its nutritional needs cannot be met until the next year.

Further information on the range, biology, and ecology of the desert tortoise can be found in Berry and Burge (1984), Brooks *et al.* 2003, Burge (1978), Burge and Bradley (1976), Bury *et al.* (1994), Gardner *et al.* 2000, Germano *et al.* (1994), Hovik and Hardenbrook (1989), Jennings (1997), Karl (1981, 1983a, 1983b), Luckenbach (1982), Oftedal 2002, Service (1994), Tracy *et al.* 2004, and Weinstein *et al.* (1987).

C. Recovery Plan

On June 28, 1994, the Service approved the final Desert Tortoise (Mojave Population) Recovery Plan (Recovery Plan) (Service 1994). The Recovery Plan divides the range of the desert tortoise into 6 recovery units and recommends establishment of 14 desert wildlife management areas throughout the recovery units. Within each desert wildlife management area, the Recovery Plan recommends implementation of reserve-level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The design of desert wildlife management areas should follow accepted concepts of reserve design. As part of the actions needed to accomplish recovery, the Recovery Plan recommends that land management within all desert wildlife management areas should restrict human activities that negatively impact desert tortoises (Service 1994). The desert wildlife management areas/areas of critical environmental concern (ACECs) have been designated by BLM through development or modification of their land-use plans in Arizona, Nevada, Utah, and parts of California.

The U.S. General Accounting Office (GAO) Report, *Endangered Species: Research Strategy and Long-Term Monitoring Needed for the Mojave Desert Tortoise Recovery Program* (GAO 2002), directed the Service to periodically reassess the Recovery Plan to

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determine whether scientific information developed since its publication could alter implementation actions or allay some of the uncertainties about its recommendations. In response to the GAO report, the Service initiated a review of the existing Recovery Plan in 2003. In March 2003, the Service impaneled the Desert Tortoise Recovery Plan Assessment Committee (Committee) to assess the Recovery Plan. The Committee was selected to represent several important characteristics with particular emphasis on commitment to solid science. The charge to the Committee was to review the entire Recovery Plan in relation to contemporary knowledge to determine which parts of the recovery plan will need updating. The recommendations of the Committee were presented to the Service and Desert Tortoise Management Oversight Group on March 24, 2004 (Tracy *et al.* 2004). The recommendations will be used as a guide by a recovery team of scientists and stakeholders to modify the Recovery Plan.

The Committee recognized that the distribution and abundance data indicate trends leading away from recovery goals in some parts of the species' range. These results indicate a need for more aggressive efforts to facilitate recovery. Many of the original prescriptions of the Recovery Plan were never implemented although these prescriptions continue to be appropriate. New prescriptions should be prioritized to assess redundancies and synergies within individual threats.

Federal, State, and local agencies and non-governmental organizations have undertaken numerous activities to attempt to recover the desert tortoise. Agencies and others have modified grazing procedures, retired livestock allotments, fenced highways, removed burros, and restored disturbed habitat, among other activities in an attempt to recover the desert tortoise. The extent that these efforts will benefit the desert tortoise will be difficult to measure because of the slow reproductive rate of the species and other factors, such as disease, drought, and predation that may be affecting the number of individuals in a region.

On November 3, 2004, the Service announced the formation of the Desert Tortoise Recovery Office (DTRO) and plans to coordinate with regional recovery implementation work groups to develop 5-year recovery action plans as the basis for revising the 1994 recovery plan. A draft revision of the Recovery Plan is anticipated for release to the public in 2008.

D. Recovery Units

The **Northeastern Mojave Recovery Unit** occurs primarily in Nevada, but it also extends into California along the Ivanpah Valley and into extreme southwestern Utah and northwestern Arizona. Vegetation within this unit is characterized by creosote bush scrub, big galleta-scrub steppe, desert needlegrass scrub-steppe, and blackbrush scrub (in higher elevations). Topography is varied, with flats, valleys, alluvial fans, washes, and rocky slopes. Much of the northern portion of the Northeastern Mojave Recovery Unit is

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characterized as basin and range, with elevations from 2,500 to 12,000 feet. Desert tortoises typically eat summer and winter annuals, cacti, and perennial grasses. Desert tortoises in this recovery unit, the northern portion of which represents the northernmost distribution of the species, are typically found in low densities (about 10 to 20 adults per square mile).

The Northeastern Mojave Recovery Unit includes the Mormon Mesa, Coyote Spring, Piute-Eldorado desert wildlife management areas; and a portion of the Beaver Dam Slope and Gold Butte-Pakoon desert wildlife management areas. These areas generally overlap the Mormon Mesa, Piute-Eldorado, Beaver Dam Slope, and Gold Butte-Pakoon critical habitat units.

The **Eastern Mojave Recovery Unit** is situated primarily in California, but also extends into Nevada in the Amargosa, Pahrump, and Piute valleys. In the Eastern Mojave Recovery Unit, desert tortoises are often active in late summer and early autumn in addition to spring because this region receives both winter and summer rains and supports two distinct annual floras on which they can feed. Desert tortoises in the Eastern Mojave Recovery Unit occupy a variety of vegetation types and feed on summer and winter annuals, cacti, perennial grasses, and herbaceous perennials. They den singly in caliche caves, bajadas, and washes. This recovery unit is isolated from the Western Mojave Recovery Unit by the Baker Sink, a low-elevation, extremely hot and arid strip that extends from Death Valley to Bristol Dry Lake. The Baker Sink area is generally not considered suitable for desert tortoises. Desert tortoise densities in the Eastern Mojave Recovery Unit can vary dramatically, ranging from 5 to as much as 350 adults per square mile (Service 1994).

The Ivanpah, Piute-Eldorado, and Fenner desert wildlife management areas are included in the Eastern Mojave Recovery Unit which generally overlap the Ivanpah and Piute-Eldorado critical habitat units in California.

The **Northern Colorado Recovery Unit** is located completely in California. The 874,843-acre Chemehuevi Desert Wildlife Management Area is the sole conservation area for the desert tortoise in this recovery unit. Desert tortoises in this recovery unit are found in the valleys, on bajadas and desert pavements, and to a lesser extent in the broad, well-developed washes. They feed on both summer and winter annuals and den singly in burrows under shrubs, in intershrub spaces, and rarely in washes. The climate is somewhat warmer than in other recovery units, with only 2 to 12 freezing days per year. The tortoises have the California mitochondrial DNA (mtDNA) haplotype and phenotype. Allozyme frequencies differ significantly between this recovery unit and the Western Mojave, indicating some degree of reproductive isolation between the two.

The **Eastern Colorado Recovery Unit** is also located completely in California. The Chuckwalla desert wildlife management area and critical habitat unit; and a portion of the

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Joshua Tree desert wildlife management area and Pinto Basin critical habitat unit occur in this recovery unit. This recovery unit occupies well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and Blue Palo Verde-Ironwood-Smoke Tree communities. Winter burrows are generally shorter in length, and activity periods are longer than elsewhere due to mild winters and substantial summer precipitation. The tortoises feed on summer and winter annuals and some cacti; they den singly. They also have the California mtDNA haplotype and shell type.

Approximately 187,046 acres of critical habitat unit lie within the Chocolate Mountains Aerial Gunnery Range. The Marine Corps primarily uses the Chocolate Mountains Aerial Gunnery Range to support target sites for aircraft and, to a lesser degree, ground-based artillery; maintenance of the targets is the other primary activity in this area. Target areas cover approximately 2,095 acres and forward arming and refueling points occupy 161 acres. Approximately 202.8 miles of roads cross this portion of the critical habitat unit.

The **Western Mojave Recovery Unit** occurs completely in California and is exceptionally heterogeneous and large. It is composed of the Western Mojave, Southern Mojave, and Central Mojave regions, each of which has distinct climatic and vegetational characteristics. The most pronounced difference between the Western Mojave and other recovery units is in timing of rainfall and the resulting vegetation. Most rainfall occurs in fall and winter and produces winter annuals, which are the primary food source of tortoises. Above ground activity occurs primarily in spring, associated with winter annual production. Thus, tortoises are adapted to a regime of winter rains and rare summer storms. Here, desert tortoises occur primarily in valleys, on alluvial fans, bajadas, and rolling hills in saltbrush, creosote bush, and scrub steppe communities. Tortoises dig deep burrows (usually located under shrubs on bajadas) for winter hibernation and summer aestivation. These desert tortoises generally den singly. They have a California mtDNA haplotype and a California shell type.

Four desert wildlife management areas occur wholly or partially within the Western Mojave Recovery Unit: Fremont-Kramer, Ord-Rodman, Superior-Cronese, and Joshua Tree. These areas approximate the Fremont-Kramer, Ord-Rodman, Superior-Cronese, and Pinto Basin critical habitat units.

The **Upper Virgin River Recovery Unit** encompasses all desert tortoise habitat in Washington County, Utah, except the Beaver Dam Slope, Utah population. Only the Upper Virgin River desert wildlife management area and critical habitat unit occur in this recovery unit. The desert tortoise population in the area of St. George, Utah is at the extreme northeastern edge of the species' range and experiences long, cold winters (about 100 freezing days) and mild summers, during which the tortoises are continually active. Here the animals live in a complex topography consisting of canyons, mesas, sand dunes,

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and sandstone outcrops where the vegetation is a transitional mixture of sagebrush scrub, creosote bush scrub, blackbush scrub, and a psammophytic community. Desert tortoises use sandstone and lava caves instead of burrows, travel to sand dunes for egg-laying, and use still other habitats for foraging. Two or more desert tortoises often use the same burrow. Shell morphology and mtDNA have not been studied in this recovery unit, but allozyme variation is similar to that found in the Northeastern Mojave Recovery Unit.

E. Distribution

The 1994 Recovery Plan conceived desert tortoises to be distributed in large populations that required large areas and large densities to recover. However, existing data are consistent with the possibility that tortoises have evolved to exist in *metapopulations*. Metapopulation theory conceives that tortoises are distributed in metapopulation patches connected with corridors that allow inefficient and asynchronous movements of individuals among the patches (Hanski 1999, Levins and Culver 1971, Levin *et al.* 1984). This paradigm conceives that some habitat patches within the range of the desert tortoise will have low population numbers or no tortoises at all, and others will have higher population numbers. Movement among the patches is necessary for persistence of the "system." If desert tortoises evolved to exist in metapopulations, then long-term persistence requires addressing habitat fragmentation caused by highways and "satellite" urbanization. Satellite urbanization occurs when blocks of habitat become developed which are substantially disjunct from existing developments (leap-frog development) resulting in a greater edge effect and creating an area of habitat between the developments which becomes degraded over time. Ensuring the integrity and function of natural corridors among habitat patches might require active management of tortoise densities in habitat patches and associated corridors.

The prescriptions for recovery in the Recovery Plan were for individual populations and assumed that preserving large blocks of habitat and managing threats in that habitat would be principally all that would be necessary to recover the species. However, that original paradigm, and the prescriptions made within that paradigm, may be wrong. Existing data have revealed population crashes that have occurred asynchronously across the range. There are reports that some populations, which have crashed previously, have subsequently increased in population density. Additionally, all known dense populations of desert tortoises have crashed. This suggests that density-dependent mortality occurs in desert tortoise populations, and that population dynamics may be asynchronous.

The genetic distinctness of tortoise populations and their pathogens should be assessed to guide all manipulative management actions (*e.g.*, head starting, translocation, habitat restoration, and corridor management). The Committee proposed a revision to the previous delineation of recovery units, or Distinct Population Segments (DPSs) based on new scientific information. The recommended delineations reflect the prevailing concepts of subpopulation "discreteness," and "significance," and incorporate

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morphological, behavioral, genetic, and environmental information. The Committee's recommendation reduces the number of DPSs from six to five by leaving the original Upper Virgin River and Western Mojave units intact and recombining the four central units into three reconfigured units: Lower Virgin River Desert, Northeastern Mojave Desert (including Amargosa Valley, Ivanpah Valley, and Shadow Valley), and Eastern Mojave and Colorado Desert. These recommended DPSs are based largely on the best resolving biochemical/genetic data of Rainboth *et al.* (1989), Lamb *et al.* (1989), Lamb and Lydehard (1994), and Britten *et al.* (1997). Because these delineations are general and not definitive at this time, more data and analyses are required which may result in additional modification. Although DPSs have been proposed by the Committee, no DPSs have been officially designated by the Service.

Threats

The Service identified key threats when the Mojave population of the desert tortoise was emergency listed as endangered and subsequently listed as a threatened species, which remain valid today. The Recovery Plan discusses threats and developed recovery objectives to minimize their effects on the desert tortoise and allow the tortoise to recover. Since becoming listed under the Act, more information is available on threats to the desert tortoise with some threats such as wildfires and alien plants affecting large areas occupied by tortoises.

Alien plants continue to contribute towards overall degradation or habitat quality for the desert tortoise. Land managers and field scientists identified 116 species of alien plants in the Mojave and Colorado Deserts (Brooks and Esque 2002). The proliferation of non-native plant species has also contributed to an increase in fire frequency in tortoise habitat by providing sufficient fuel to carry fires, especially in the intershrub spaces that are mostly devoid of native vegetation (Service 1994; Brooks 1998; Brown and Minnich 1986). Changes in plant communities caused by alien plants and recurrent fire may negatively affect the desert tortoise by altering habitat structure and species composition of their food plants (Brooks and Esque 2002).

Changing ecological conditions as a result of natural events or human-caused activities may stress individual tortoises and result in a more severe clinical expression of URTD (Brown *et al.* 2002). For example, the proliferation of non-native plants within the range of the tortoise has had far-reaching impacts on tortoise populations. Tortoises have been documented to prefer native vegetation over non-natives (Tracy *et al.* 2004). Non-native annual plants in desert tortoise critical habitat in the western Mojave Desert were identified to compose over 60 percent of the annual biomass (Brooks 1998). The reduction in quantity and quality of forage may stress tortoises and make them more susceptible to drought- and disease-related mortality (Brown *et al.* 1994). Malnutrition has been associated with several disease outbreaks in both humans and turtles (Borysenko and Lewis 1979).

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Numerous wildfires occurred in desert tortoise habitat across the range of the desert tortoise in 2005 due to abundant fuel from the proliferation of non-native plant species after a very wet winter. These wildfires heavily impacted two of the six desert tortoise recovery units, burning less than 19 percent of desert tortoise habitat in the Upper Virgin River and 10 percent in the Northeastern Mojave (Table 2). In the Upper Virgin River Recovery Unit, 19 percent of the Upper Virgin River critical habitat unit (CHU) burned. In the Northeastern Mojave Recovery Unit, three CHUs were impacted: about 23 percent of the Beaver Dam Slope CHU burned, 13 percent of the Gold Butte-Pakoon CHU, and 4 percent of the Mormon Mesa CHU. Although it is known that tortoises were burned and killed by the wildfires, tortoise mortality estimates are not available at this time.

Table 2. Acres of desert tortoise habitat burned in each recovery unit during 2005.

Recovery Unit	Habitat Burned (acres)	% Habitat Burned	CH* Burned (acres)	% CH Burned
Upper Virgin River**	10,446	< 19	10,446	19
Northeastern Mojave***	500,000	10	124,782	11
Eastern Mojave	6,000	< 1	1,219	<1
Western Mojave	0	0	0	0
Northern Colorado	0	0	0	0
Eastern Colorado	0	0	0	0
Total	516,446	-	136,447	-

* CH – critical habitat

** Estimates only for Upper Virgin River; needs GIS analysis.

*** Potential habitat was mapped and calculated as Mojave Desert less than 4,200 feet in elevation minus playas, open water, and developed and agricultural lands.

Disease and raven predation have been considered important threats to the desert tortoise since its emergency listing in 1989. What is currently known with certainty about disease in the desert tortoise relates entirely to individual tortoises and not populations; virtually nothing is known about the demographic consequences of disease (Tracy *et al.* 2004). Disease was identified in the 1994 Recovery Plan as an important threat to the desert tortoise. Disease is a natural phenomenon in wild populations of animals and can contribute to population declines by increasing mortality and reducing reproduction. However, URTD appears to be a complex, multi-factorial disease interacting with other stressors to affect desert tortoises (Brown *et al.* 2002; Tracy *et al.* 2004). The disease occurs mostly in relatively dense desert tortoise populations, as mycoplasmal infections are dependent upon higher densities of the host (Tracy *et al.* 2004).

From 1969 to 2004 the numbers of common ravens in the west Mojave Desert increased approximately 700 percent (Boorman and Kristan 2006). Population increases have also been noted at other locations particularly in the California Desert. This many-fold

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increase above historic levels and a shift from a migratory species to a resident species is due in a large part to recent human subsidies of food, water, and nest sites (Knight *et al.* 1993, Boarman 1993, Boarman and Berry 1995). While not all ravens may include tortoises as significant components of their diets, these birds are highly opportunistic in their feeding patterns and concentrate on easily available seasonal food sources, such as juvenile tortoises.

Boarman (2002) identified the following major categories of threats: Agriculture, collection by humans, construction activities, disease, drought, energy and mineral development, fire, garbage and litter, handling and deliberate manipulation of tortoises, invasive [alien] plants, landfills, livestock grazing, military operations, noise and vibration, off-road [OHV] activities, predation, non-off-road vehicle recreation, roads, highways and railroads, utility corridors, vandalism, and wild horses and burros. For additional information on threats to the desert tortoise refer to Boarman (2002), Tracy *et al.* (2004), Service 1994.

F. Reproduction

Desert tortoises possess a combination of life history and reproductive characteristics that affect the ability of populations to survive external threats. Tortoises grow slowly, require 15 to 20 years to reach sexual maturity, and have low reproductive rates during a long period of reproductive potential (Turner *et al.* 1984; Bury 1987; Tracy *et al.* 2004).

Choice of mate is mediated by aggressive male-male interactions and possibly by female choice (Niblick *et al.* 1994). Tortoises in the West Mojave Desert may exhibit pre-breeding dispersal movements, typical of other vertebrates, ranging from 1 to 10 miles in a single season (Sazaki *et al.* 1995). The advantage of pre-breeding dispersal may be to find a more favorable environment in which to reproduce. However, the risk is increased mortality from predation, exposure, starvation, or anthropogenic factors (*e.g.*, motor vehicle mortality).

The average clutch size is 4.5 eggs (range 1 to 8), with 0-3 clutches deposited per year (Turner *et al.* 1986). Clutch size and number probably depend on female size, water, and annual productivity of forage plants in the current and previous year (Turner *et al.* 1984, 1986; Henen 1997). The ability to alter reproductive output in response to resource availability may allow individuals more options to ensure higher lifetime reproductive success. The interaction of longevity, late maturation, and relatively low annual reproductive output causes tortoise populations to recover slowly from natural or anthropogenic decreases in density. To ensure population stability or increase, these factors also require relatively high juvenile survivorship (75 to 98 percent per year), particularly when adult mortality is elevated (Congdon *et al.* 1993). Most eggs are laid in spring (April through June) and occasionally in fall (September to October). Eggs are laid in sandy or friable soil, often at the entrance to burrows. Hatching occurs 90 to

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120 days later, mostly in late summer and fall (mid-August to October). Eggs and young are untended by the parents.

Tortoise sex determination is environmentally controlled during incubation (Spotila *et al.* 1994). Hatchlings develop into females when the incubation (*i.e.*, soil) temperature is greater than 88.7° F and males when the temperature is below that (Lance 2006). Mortality is higher when incubation temperatures are greater than 95.5° F or less than 78.8° F. The sensitivity of embryonic tortoises to incubation temperature may make populations vulnerable to unusual changes in soil temperature (*e.g.*, from changes in vegetation cover).

At Yucca Mountain, Nye County Nevada (Northeastern Mojave Recovery Unit), Mueller *et al.* (1998) estimated that the mean age of first reproduction was 19 to 20 years; clutch size (1 to 10 eggs) and annual fecundity (0 to 16 eggs) were related to female size but annual clutch frequency (0 to 2) was not. Further, Mueller suggested that body condition during July to October may determine the number of eggs a tortoise can produce the following spring. McLuckie and Friedell (2002) determined that the Beaver Dam Slope desert tortoise population, within the Northeastern Mojave Recovery Unit, had a lower clutch frequency (1.33 ± 0.14) per reproductive female and fewer reproductive females (14 out of 21) when compared with other Mojave desert tortoise populations. In the 1990s, Beaver Dam Slope experienced dramatic population declines due primarily to disease and habitat degradation and alteration (Service 1994). The number of eggs that a female desert tortoise can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition (Henen 1997, McLuckie and Fridell 2002).

g. Numbers

Long-term monitoring of desert tortoise populations is a high priority recovery task as identified in the Recovery Plan. From 1995 to 1998, pilot field studies and workshops were conducted to develop a monitoring program for desert tortoise. In 1998, the Desert Tortoise Management Oversight Group identified line distance sampling as the appropriate method to determine rangewide desert tortoise population densities and trends. Monitoring of populations using this method is underway across the range of the desert tortoise. Successful rangewide monitoring will enable managers to evaluate the overall effectiveness of recovery actions and population responses to these actions, thus guiding recovery of the Mojave desert tortoise. Rangewide tortoise population monitoring began in 2001 and is conducted annually.

Declines in tortoise abundance appear to correspond with increased incidence of disease in tortoise populations. The Goffs permanent study plot in Ivanpah Valley, California, suffered 92 to 96 percent decreases in tortoise density between 1994 and 2000 (Berry 2003). The high prevalence of disease in Goffs tortoises likely contributed to this decline

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(Christopher *et al.* 2003). Upper respiratory tract disease has not yet been detected at permanent study plots in the Colorado Desert of California, but is prevalent at study plots across the rest of the species' range (Berry 2003) and has been shown to be a contributing factor in population declines in the western Mojave Desert (Brown *et al.* 2002; Christopher *et al.* 2003). High mortality rates at permanent study plots in the northeastern and eastern Mojave appear to be associated with incidence of shell diseases in tortoises (Jacobson *et al.* 1994). Low levels of shell diseases were detected in many populations when the plots were first established, but were found to increase during the 1980s and 1990s (Jacobson *et al.* 1994; Christopher *et al.* 2003). A herpesvirus has recently been discovered in desert tortoises, but little is known about its effects on tortoise populations at this time (Berry *et al.* 2002; Origgi *et al.* 2002).

The general trend for desert tortoises within the California Desert is one of decline. Transects in the Western Mojave Recovery Unit that did not detect any sign over large areas of previously occupied habitat and the numerous carcasses found on permanent study plots provide evidence of a decline. During line distance sampling conducted in 8 desert wildlife management areas in California in 2003, 930 carcasses and 438 live desert tortoises were detected; more carcasses than live animals were detected in every study area (Woodman 2004). In 2004, workers conducting line distance sampling in California detected 1,796 carcasses and 534 live desert tortoises; more carcasses were detected than live animals in every study area (Woodman 2005).

There are many natural causes of mortality, but their extents are difficult to evaluate and vary from location to location. Native predators known to prey on tortoise eggs, hatchlings, juveniles, and adults include: coyote, kit fox, badger (*Taxidea taxus*), skunks (*Spilogale putorius*), common ravens, golden eagles (*Aquila chrysaetos*), and Gila monsters (*Heloderma suspectum*). Additional natural sources of mortality to eggs, juvenile, and adults may include desiccation, starvation, being crushed (including in burrows), internal parasites, disease, and being turned over onto their backs during fights or courtship (Luckenbach 1982, Turner *et al.* 1987). Free-roaming dogs cause mortality, injury, and harassment of desert tortoises (Evans 2001). Population models indicate that for a stable population to maintain its stability, on average, no more than 25 percent of the juveniles and 2 percent of the adults can die each year (Congdon *et al.* 1993, Service 1994). However, adult mortality at one site in the West Mojave was 90 percent over a 13-year period (Berry 1997). Morafka *et al.* (1997) reported 32 percent mortality over 5 years among free-ranging and semi-captive hatchling and juvenile tortoises (up to 5 years old) in the West Mojave. When the 26 that were known to have been preyed on by ravens were removed from the analysis, mortality dropped to 24 percent. Turner *et al.* (1987) reported an average annual mortality rate of 19 to 22 percent among juveniles over a 9-year period in the East Mojave.

Northeastern Mojave Recovery Unit. A kernel analysis was conducted in 2003-2004 for the desert tortoise (Tracy *et al.* 2004) as part of the reassessment of the 1994 Recovery

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Plan. The kernel analyses revealed several areas in which the kernel estimations for live tortoises and carcasses did not overlap. The pattern of non-overlapping kernels that is of greatest concern is those in which there were large areas where the kernels encompassed carcasses but not live animals. These regions represent areas within desert wildlife management areas where there were likely recent die-offs or declines in tortoise populations. The kernel analysis indicated large areas in the Piute-Eldorado Valley where there were carcasses but no live tortoises. For this entire area in 2001, there were 103 miles of transects walked, and a total of 6 live and 15 dead tortoises found, resulting in a live encounter rate of 0.06 tortoises per mile of transect for this area. This encounter rate was among the lowest that year for any of the areas sampled in the range of the Mojave desert tortoise (Tracy *et al.* 2004).

Results of desert tortoise surveys at three survey plots in Arizona indicate that all three sites have experienced significant die-offs. Six live tortoises were located in a 2001 survey of the Beaver Dam Slope Exclosure Plot (Walker and Woodman 2002). Three had definitive signs of URTD, and two of those also had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 31 live tortoises in 1996, 20 live tortoises in 1989, and 19 live tortoises in 1980. The 2001 survey report indicated that it is likely that there is no longer a reproductively viable population of tortoises on this study plot. Thirty-seven live tortoises were located in a 2002 survey of the Littlefield Plot (Young *et al.* 2002). None had definitive signs of URTD. Twenty-three tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 80 live tortoises in 1998 and 46 live tortoises in 1993. The survey report indicated that the site might be in the middle of a die-off due to the high number of carcasses found since the site was last surveyed in 1998. Nine live tortoises were located during the mark phase of a 2003 survey of the Virgin Slope Plot (Goodlett and Woodman 2003). The surveyors determined that the confidence intervals of the population estimate would be excessively wide and not lead to an accurate population estimate, so the recapture phase was not conducted. One tortoise had definitive signs of URTD. Seven tortoises had lesions indicative of cutaneous dyskeratosis. Previous surveys of this plot detected 41 live tortoises in 1997 and 15 live tortoises in 1992. The survey report indicated that the site may be at the end of a die-off that began around 1996-1997.

Eastern Mojave Recovery Unit. The permanent study plot in the Ivanpah Valley is the only such plot in this desert wildlife management area; consequently, we cite information from that plot herein, although it is located within the Mojave National Preserve. Data on desert tortoises on a permanent study plot in this area were collected in 1980, 1986, 1990, and 1994; the densities of desert tortoises of all sizes per square mile were 386, 393, 249, and 164, respectively (Berry 1996).

The Shadow Valley Desert Wildlife Management Area lies north of the Mojave National Preserve and west of the Clark Mountains. It occupies approximately 101,355 acres. Data on desert tortoises on a permanent study plot in this area were collected in 1988 and

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1992; the densities of desert tortoises of all sizes per square mile were 50 and 58, respectively (Berry 1996).

The Piute-Fenner Desert Wildlife Management Area lies to the east of the southeast portion of the Mojave National Preserve. It occupies approximately 173,850 acres. The permanent study plot at Goffs is the only such plot in this desert wildlife management area; consequently, we cite information from that plot herein, although it is located within the Mojave National Preserve. Data on desert tortoises on the permanent study plot were collected in 1980, 1990, and 1994; Berry (1996) estimated the densities of desert tortoises of all sizes at approximately 440, 362, and 447 individuals per square mile, respectively. As Berry (1996) noted, these data seem to indicate that this area supported "one of the more stable, high density populations" of desert tortoises within the United States. Berry (1996) also noted that "a high proportion of the animals (had) shell lesions." In 2000, only 30 live desert tortoises were found; Berry (2000) estimated the density of desert tortoises at approximately 88 animals per square mile. The shell and skeletal remains of approximately 393 desert tortoises were collected; most of these animals died between 1994 and 2000. Most of the desert tortoises exhibited signs of shell lesions; three salvaged desert tortoises showed abnormalities in the liver and other organs and signs of shell lesions. None of the three salvaged desert tortoises tested positive for upper respiratory tract disease.

Ivanpah and Piute-Eldorado valleys contained study plots that were analyzed in the Eastern Mojave Recovery Unit analysis. While there was no overall statistical trend in adult density over time, the 2000 survey at Goffs and the 2002 survey at Shadow Valley indicate low densities of adult tortoises relative to earlier years. Unfortunately, there are no data in the latter years for all five study plots within this recovery unit, and therefore, while there is no statistical trend in adult densities, we cannot conclude that tortoises have not experienced recent declines in this area. The probability of finding a carcass on a distance sampling transect was considerably higher for Ivanpah, Chemehuevi, Fenner, and Piute-Eldorado, which make up the Eastern Mojave Recovery Unit.

Northern Colorado Recovery Unit. Two permanent study plots are located within the Chemehuevi Desert Wildlife Management Area. At the Chemehuevi Valley and Wash plot, 257 and 235 desert tortoises were registered in 1988 and 1992, respectively (Berry 1999). During the 1999 spring survey, only 38 live desert tortoises were found. The shell and skeletal remains of at least 327 desert tortoises were collected; most, if not all, of these animals died between 1992 and 1999. The frequency of shell lesions and nutritional deficiencies appeared to be increasing and may be related to the mortalities.

The Upper Ward Valley permanent study plot was surveyed in 1980, 1987, 1991, and 1995; Berry (1996) estimated the densities of desert tortoises of all sizes at approximately 437, 199, 273, and 447 individuals per square mile, respectively.

Eastern Colorado Recovery Unit. This recovery unit is also located completely in California, occupy well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and Blue Palo Verde-Ironwood-Smoke Tree communities. Winter burrows are generally shorter in length, and activity periods are longer than elsewhere due to mild winters and substantial summer precipitation. The tortoises feed on summer and winter annuals and some cacti; they den singly. They also have the California mtDNA haplotype and shell type.

Two permanent study plots are located within this desert wildlife management area. At the Chuckwalla Bench plot, Berry (1996) calculated approximate densities of 578, 396, 167, 160, and 182 desert tortoises per square mile in 1979, 1982, 1988, 1990, and 1992, respectively. At the Chuckwalla Valley plot, Berry (1996) calculated approximate densities of 163, 181, and 73 desert tortoises per square mile in 1980, 1987, and 1991, respectively. Tracy *et al.* (2004) concluded that these data show a statistically significant decline in the number of adult desert tortoises over time; they further postulate that the decline on the Chuckwalla Bench plot seemed to be responsible for the overall significant decline within the recovery unit.

The kernel analysis of the Eastern Colorado Recovery Unit shows that the distributions of the living tortoises and carcasses overlap for most of the region. The Chuckwalla Bench study plot occurs outside the study area, which creates a problem in evaluating what may be occurring in that area of the recovery unit. However, the few transects walked in that portion of the desert wildlife management area yielded no observations of live or dead tortoises. This illustrates our concern for drawing conclusions from areas represented by too few study plots and leaves us with guarded concern for this region. The percentage of transects with live animals was relatively high for most desert wildlife management areas within the Eastern Colorado Recovery Unit. In addition, the ratio of carcasses to live animals was low within this recovery unit relative to others.

Western Mojave Recovery Unit. This recovery unit includes the proposed Pinto Mountains, Ord-Rodman, Superior-Cronese, and Fremont-Kramer desert wildlife management areas. Heaton *et al.* (2004) estimated that 20,420 to 41,224 adult desert tortoises reside in the Western Mojave Recovery Unit; this range was based on extrapolation of data collected during line distance sampling.

The proposed 117,120-acre Pinto Mountains Desert Wildlife Management Area is located in the southeastern portion of the Western Mojave Recovery Unit. No permanent study plots are located in this proposed desert wildlife management area. Little information exists on the densities of desert tortoises in this area. Tracy *et al.* (2004) noted that the distribution of carcasses and live desert tortoises appeared to be what one would expect in a "normal" population of desert tortoises; that is, carcasses occurred in the same areas as live animals and were not found in extensive areas in the absence of live desert tortoises.

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The proposed Ord-Rodman Desert Wildlife Management Area is located to the southeast of the city of Barstow. As proposed, it would cover approximately 248,320 acres. The recovery plan notes that the estimated density of desert tortoises in this area is 5 to 150 animals per square mile (Service 1994). Three permanent study plots are located within and near this proposed desert wildlife management area.

The proposed Superior-Cronese Desert Wildlife Management Area is located north of the Ord-Rodman Desert Wildlife Management Area; two interstate freeways and rural, urban, and agricultural development separate them. This proposed desert wildlife management area covers 616,320 acres. No permanent study plots have been established in this area; the density of desert tortoises has been estimated through numerous triangular transects and line distance sampling efforts. This desert wildlife management area supports densities of approximately 20 to 250 desert tortoises per square mile (Service 1994).

The proposed Fremont-Kramer Desert Wildlife Management Area is located west of the Superior-Cronese Desert Wildlife Management Area; the two desert wildlife management areas are contiguous. This proposed desert wildlife management area covers approximately 494,720 acres. The recovery plan notes that the estimated density of desert tortoises in this area was 5 to 100 animals per square mile (Service 1994).

Berry (1996) notes that the overall trend in this proposed desert wildlife management area is "a steep, downward decline" and lists predation by common ravens and domestic dogs, off-road vehicle activity, illegal collecting, upper respiratory tract disease, and environmental contaminants as contributing factors.

During the summers of 1998 and 1999, BLM funded surveys of over 1,200 transects over a large area of the western Mojave Desert. These transects failed to detect sign of desert tortoises in areas where they were previously considered to be common. Although these data have not been fully analyzed and compared with previously existing information, they strongly suggest that the number of desert tortoises has declined substantially over large areas of the western Mojave Desert. The Desert Tortoise Recovery Plan Assessment Committee also noted that the Western Mojave Recovery Unit has experienced declines in the number of desert tortoises (Tracy *et al.* 2004).

The Western Mojave has experienced marked population declines as indicated in the Recovery Plan and continues today. Spatial analyses of the Western Mojave show areas with increased probabilities of encountering dead rather than live animals, areas where kernel estimates for carcasses exist in the absence of live animals, and extensive regions where there are clusters of carcasses where there are no clusters of live animals. Collectively, these analyses point generally toward the same areas within the Western Mojave, namely the northern portion of the Fremont-Kramer Desert Wildlife Management Area and the northwestern part of the Superior-Cronese Desert Wildlife Management Area. Together, these independent analyses, based on different

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combinations of data, all suggest the same conclusion for the Western Mojave. Data are not currently available with sufficient detail for most of the range of the desert tortoise with the exception of the Western Mojave (Tracy *et al.* 2004).

Upper Virgin River Recovery Unit. The recovery plan states that desert tortoises occur in densities of up to 250 adult animals per square mile within small areas of this recovery unit; overall, the area supports a mosaic of areas supporting high and low densities of desert tortoises (Service 1994). The Utah Division of Wildlife Resources (UDWR) has intensively monitored desert tortoises, using a distance sampling technique, since 1998. Monitoring in 2003 indicated that the density of desert tortoises was approximately 44 per square mile throughout the reserve. This density represents a 41 percent decline since monitoring began in 1998 (McLuckie *et al.* 2006). The report notes that the majority of desert tortoises that died within one year (n=64) were found in areas with relatively high densities; the remains showed no evidence of predation.

In the summer of 2005, approximately 10,446 acres of desert tortoise habitat burned in the Red Cliffs Desert Reserve. UDWR estimated that as many as 37.5 percent of adult desert tortoises may have died as a direct result of the fires (McLuckie *et al.* 2006).

Rangewide Population Monitoring Results: 2001-2005

Rangewide tortoise population monitoring began in 2001 and is conducted annually (Table 3). Rangewide sampling of desert tortoises consisted of 4,986 transects totaling 15,957 miles which is the most comprehensive attempt undertaken to date to establish the density of this species (Service 2006). The rangewide monitoring program is designed to detect long-term population trends. However, density estimates from any brief window of time (*e.g.*, 2001-2005) would be expected to detect only catastrophic declines or remarkable population increases. Therefore, following the first 5 years of the long-term monitoring project, the goal is not to document trends within this time period, but to gather information on baseline densities, and year-to-year and recovery unit-to-recovery unit variability. This information will also reflect transect-to-transect variability in observations as well as regional variability in detection functions.

Rangewide sampling was initiated during a severe drought that intensified in 2002 and 2003, particularly in the western Mojave Desert in California. At the time the Recovery Plan was written, there was less consideration of the potentially important role of drought in the desert ecosystem, particularly regarding desert tortoises. In the meantime, studies have documented vulnerability of juvenile (Wilson *et al.* 2001) and adult tortoises (Peterson 1994, Peterson 1996, Henen 1997, Longshore *et al.* 2003) to drought.

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Table 3. Summary of Desert Tortoise Densities by Recovery Unit.

	Year	# of Transects	Length (mi)	# of Adult Tortoises Located	Density (mi ²)	95 percent Confidence Interval Low	95 percent Confidence Interval High
Recovery Units (5)	2001	1,631	1,653	279	9.40	8.02	11.0
	2002	1,010	2,490	289	8.95	7.35	10.9
	2003	990	2,407	354	8.19	6.77	9.90
	2004	610	4,086	445	8.05	6.97	9.29
	2005	745	5,321	489	8.76	7.66	10.0
Upper Virgin River ¹	2001	159	195	168	48.6	37.0	63.7
	2002	—	—	—	—	—	—
	2003	157	192	96	27.2	21.1	35.0
	2004	—	—	—	—	—	—
	2005	155	189	136	35.1	26.4	46.7

¹Data from McLuckie *et al.* (2006)

Considerable decreases in density were reported in 2003 in the Eastern Colorado and Western Mojave recovery units, with no correspondingly large rebound in subsequent estimates. Desert tortoise densities reported in these recovery units were approximately 8 to 9 tortoises per square mile.

The status and trends of desert tortoise populations are difficult to determine based only upon assessment of tortoise density due largely to their overall low abundance, subterranean sheltering behavior, and cryptic nature of the species. Thus, monitoring and recovery should include a comprehensive assessment of the status and trends of threats and habitats as well as population distribution and abundance.

For more information on the desert tortoise or expanded discussions on recovery units and recommended DPSs, please refer to the Recovery Plan (Service 1994) and report prepared by the Committee (Tracy *et al.* 2004).

III. Environmental Baseline

A. Status of the Species in the Action Area

The 229-acre proposed heliport facility site is referred to as the “South of Sloan” site. The site is located approximately 17 miles south of Las Vegas in Clark County, Nevada, on the east side of Interstate 15 (I-15). The entire heliport facility site is located on lands

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that are administered by BLM's Las Vegas Field Office, but will be congressionally granted to the CCDOA. The project area is situated within the Great Basin portion of the Basin and Range Physiographic Province. Alluvial fans extend from the surrounding mountain ranges to the valley floor.

Elevation of the proposed facility site ranges from 2,960 to 3,360 feet above mean sea level (MSL). Surface soils are typically gravelly sandy loam and do not have a high gypsum content. The eastern portion of the site has steep, rocky terrain and falls within the transition zone between creosote bursage and blackbrush communities. The western portion of the site is much flatter and has friable soils conducive to burrowing. Several ephemeral channels traverse the heliport site from east to west. There are no perennial watercourses within the heliport site.

The utility corridors run north and south of the heliport site and occur mainly within the creosote bush community. Elevation in the northern section of the corridor ranges from 2,500 to 2,960 feet above MSL, and in the southern section of the corridor ranges from 2,850 to 3,040 feet above MSL. Geology and soils characteristics are similar to the western portions of the heliport site. Several ephemeral channels traverse the site from east to west in the northern end of the corridor and from west to east in the southern end of the corridor. There are no perennial watercourses within the utility corridors.

The proposed project site (heliport facility site and utility corridors) consists of Mojave Desert shrubland, which is characterized mostly by elevation, gentle slopes, and dominant vegetation. The area is dominated by the Sonora-Mojave Creosote Bush - White Bursage Desert Scrub Community (SWCA 2007). This plant community occurs on alluvial slopes, valley floors, and mountain slopes below 4,000 feet MSL, and is usually found on well-drained soils, forming a continuous layer, except on the rockiest of slopes, washes, saltbush flats, and dry lakebeds. Vegetation cover ranges from 5 to 80 percent within the proposed project site. Creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), Mojave yucca (*Yucca schidigera*), desert trumpet (*Eriogonum inflatum*), and Mormon tea (*Ephedra nevadensis*) dominate the landscape.

The BA describes the proposed heliport facility site and utility corridors as supporting high quality tortoise habitat. However, during site surveys signs of disturbance were evident throughout the area. Dirt roads, trash, and unofficial shooting ranges were present. Ravens were observed in the area, most likely attracted to the trash, and surveyors observed people driving in the desert and using firearms on an almost daily basis.

Presence-absence surveys for the desert tortoise were conducted within the proposed heliport facility site in August of 2004 and within the utility corridors and zone-of-influence in October and November of 2006. The entire heliport facility, utility corridors, and zone-of-influence were surveyed using belt transects with a maximum distance of

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30 feet between surveyors. Biologists searched for live desert tortoises and their sign, including tracks, scat, carcasses, and burrows.

Table 4 shows total corrected sign (TCS) observed during surveys. Five live tortoises were discovered, as well as a total of 418 TCS within the proposed project site, utility corridors, and zone-of-influence. This may be translated into an average of 0.79 TCS per acre (TCS divided by total acres surveyed, or $418 \div 526$). As described by Berry and Nicholson (1984), and later adapted by BLM's Las Vegas District for tortoise densities in Nevada, total corrected sign estimates ranging from 0.6 to 1.1 per acre are likely representative of moderate relative densities ranging from 45 to 90 tortoises per square mile. As reflected in Table 4, four of the tortoises and most of the sign were observed in the zone-of-influence.

Table 4. Total corrected sign observed during desert tortoise presence-absence surveys within the proposed heliport facility site, utility corridors, and zone-of-influence.

Survey Day	Sign Type					Total
	Live Tortoises	Tortoise Carcasses	Burrows	Scat	Other Sign	
2004 Survey						
1 - 3	0	3	84	2	0	89
2006 Survey						
1	0	0	29	4	0	33
2	1	1	20	5	0	27
3	0	0	1	1	0	2
4 (ZOI)	0	1	9	2	0	12
5 (ZOI)	1	3	19	8	0	31
6 (ZOI)	0	0	25	8	0	33
7 (ZOI)	2	7	33	4	0	46
8 (ZOI)	0	2	69	19	0	90
9 (ZOI)	0	0	21	5	0	26
10 (ZOI)	1	0	5	0	0	6
11	0	1	17	5	0	23
Total Sign	5	18	332	63	0	418

B. Factors Affecting the Species in the Action Area

The proposed project site most likely is exposed to high levels of human use and disturbance due to its location in proximity to the Las Vegas Valley and I-15. Although

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patches of high quality habitat were observed, this area is most likely undergoing increasing pressure from human development and associated disturbances. Heavy human activity in the area may result in tortoise mortality from vehicle encounters or target shooting, increased predation from ravens, illegal collection of tortoises, and degradation of the habitat from disturbance, fragmentation, and the spread of non-native plants.

Habitat Conservation Plans Completed in the Action Area

On July 11, 1995, the Service issued a section 10(a)(1)(B) incidental take permit under the Act (No. PRT-801045) to Clark County, Nevada, including the cities within Clark County and the Nevada Department of Transportation (NDOT). The permit became effective August 1, 1995, and authorized the "incidental take" of desert tortoises for a period of 30 years on 111,000 acres of non-Federal land in Clark County, and approximately 2,900 acres associated with NDOT activities in Clark, Lincoln, Esmeralda, Mineral, and Nye counties, Nevada. The Clark County Desert Conservation Plan (DCP) served as the permittees' habitat conservation plan and detailed their proposed measures to minimize, monitor, and mitigate the effects of the proposed take on the desert tortoise (Regional Environmental Consultants 1995). The permittees imposed, and NDOT and developers paid, a fee of \$550 per acre of habitat disturbance to fund these measures. The permittees expended approximately \$1.65 million per year to minimize and mitigate the potential loss of desert tortoise habitat. The majority of these funds were used to implement minimization and mitigation measures, such as increased law enforcement; construction of highway barriers; road designation, signing, closure, and rehabilitation; and tortoise inventory and monitoring within the lands initially conserved under the previously-approved desert tortoise short-term HCP, and other areas being managed for desert tortoise recovery (e.g., ACECs or DWMAs). The benefit to the species, as provided by the DCP, substantially minimized and mitigated those effects which occurred through development within the permit area and aided in recovery of the desert tortoise.

On November 22, 2000, the Service issued an incidental take permit (TE-034927) to Clark County, Nevada, including the cities within Clark County and NDOT. The Clark County MSHCP and Environmental Impact Statement (RECON 2000), serves as the permittees' HCP and describes the measures they will implement to minimize, mitigate, and monitor the effects of covered activities on 78 covered species. In the biological/conference opinion (File No. 1-5-00-FW-575) provided for the issuance of the incidental take permit, the Service determined that issuance of the permit would not jeopardize the listed desert tortoise or southwestern willow flycatcher, or the other 76 species that are not listed or proposed for listing under the Act that are covered under the permit. The permit allows incidental take of covered species for a period of 30 years on up to 145,000 acres of non-Federal land in Clark County, and within NDOT ROW south of the 38th parallel in Nevada. Heliport construction on 7 acres of land currently owned by CCDOA and any future proposals to disturb habitat within the 83-acre undisturbed portion of the heliport facility would fall under purview of the Clark County MSHCP.

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*Programmatic Biological Opinions Affecting the Action Area*File No. 1-5-96-F-023R.3

On April 11, 1996, the Service issued a biological opinion (File No. 1-5-96-F-023R) to BLM's Las Vegas District for implementation of portions of their Management Framework Plan and proposed Las Vegas District (formerly Stateline) RMP pertaining to land sales, exchanges, leases, and ROW within the Las Vegas Valley.

File No. 1-5-97-F-251

On November 25, 1997, the Service issued a programmatic biological opinion to BLM's Las Vegas Field Office for implementation of activities within BLM's Las Vegas District, excluding desert tortoise critical habitat, proposed desert tortoise ACECs, and the area covered by the Las Vegas Valley programmatic consultation (File No. 1-5-96-023R) described above. BLM actions covered under the consultation include land sales, exchanges, leases, and ROW that may result in loss of tortoises or their habitat through surface disturbance, land disposal, and fencing.

IV. Effects of the Proposed Action on the Listed Species

Direct effects encompass the immediate, often obvious effect of the proposed action on the desert tortoise or its habitat. Indirect effects are caused by or will result from the proposed action and are later in time, but still reasonably certain to occur. In contrast to direct effects, indirect effects can often be more subtle, and may affect desert tortoise populations and habitat quality over an extended period of time, long after project activities have been completed. Indirect effects are of particular concern for long-lived species such as the desert tortoise, because project-related effects may not become evident in individuals or populations until years later.

Construction of the proposed heliport facility site would result in the disturbance of 146 acres of desert tortoise habitat, including 112 acres for facility buildings, airfield, roads, and other permanent structures; and 34 acres that would be graded and removed of vegetation for erosion control, and storage and staging sites during facility construction. Approximately 83 acres of the 229-acre parcel would be left undisturbed.

Construction associated with installation of utilities such as power, water, and communication lines is estimated to result in the disturbance of up to 185 acres of desert tortoise habitat. However, total disturbance of desert tortoise habitat would not be known until the individual utility companies apply for and receive ROW grants authorized by BLM. Incidental take of desert tortoise resulting from BLM ROW authorizations would be covered under one of BLM's programmatic biological opinions in southern Nevada (File No. 1-5-97-F-251 or File No. 1-5-98-F-053).

Construction impacts will occur as a result of grading and removal of vegetation; soil excavation; deposition of spoil material; construction of access roads; crushing of vegetation and disturbance

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of habitat from equipment storage and staging areas; and other activities requiring the use of heavy equipment and machinery. These activities will remove habitat required by tortoises for foraging, breeding, and cover.

Tortoises may be killed or injured as a result of being crushed by vehicles (including workers commuting to and from the project area), equipment moving soil, or entrapment in burrows or open trenches. Earth-moving equipment could crush tortoises that remain in burrows or return to burrows and are not detected by a biological monitor. Tortoises could wander into the construction work area and the path of vehicles, or take refuge underneath project vehicles and equipment and could be killed or injured when the equipment or vehicle is moved. Tortoises could also suffer injury or death if they enter access roads, fall into uncovered trenches, or enter pipe segments during construction or maintenance (Bury 1978, Luckenbach 1975, Nicholson 1978). Vehicles that stray from designated areas may crush desert tortoises above ground or in their burrows. Desert tortoises may be attracted to the construction area by application of water to control dust. Measures proposed by FAA and CCDOA (SWCA 2007) to: (1) post and enforce a 15 mile per hour speed limit, (2) install tortoise-proof fencing around construction-sites and along access roads, (3) conduct pre-construction surveys and remove tortoises and eggs, and (4) implement a tortoise education program, should minimize most of these effects.

Project personnel could illegally collect tortoises for pets, removing them from the wild population. Tortoises that are physically moved out of project areas to prevent mortality or injury could be inadvertently harmed if not handled properly. Urine and large amounts of urates are frequently voided during handling and may represent a severe water loss, particularly to juveniles (Luckenbach 1982). Overheating can occur if tortoises are not placed in the shade when ambient temperatures equal or exceed or temperature maximums for the species (Desert Tortoise Council 1994, revised 1999). Tortoise eggs moved during clearance surveys could also be harmed if not handled properly. FAA and CCDOA proposals to implement a tortoise education program and Service-approved protocol for handling desert tortoises and their eggs, and to ensure that only authorized individuals handle tortoises, should reduce these potential effects to desert tortoises.

Construction and maintenance actions associated with the proposed project may provide food in the form of trash and litter; or water, which attracts tortoise predators such as the common raven, kit fox, and coyote (Boarman and Berry 1995, BLM 1990). Natural predation in undisturbed, healthy ecosystems is generally not an issue of concern. However, predation rates may be altered when natural habitats are disturbed or modified. Common raven populations in some areas of the Mojave Desert have increased 1500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman 1992). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence (BLM 1990). FAA and CCDOA proposals to implement a litter-control and desert tortoise education program should minimize avian predation effects on desert tortoises.

If fuel or other hazardous materials are spilled in desert tortoise habitat, desert tortoises and their habitat may be adversely affected as a result. FAA and CCDOA proposal to require such spills

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to be reported, contained immediately, and cleaned up at the time of the occurrence should minimize the potential effects on the desert tortoise and its habitat.

Although the project would not remove any habitat outside the project area, the project may degrade surrounding habitat by introducing invasive weeds into the project area, which later may spread into the surrounding desert. Chemical spills may flow into adjacent habitat via naturally-occurring or manmade drainages, contaminating nearby habitat. Grading and removal of vegetation may also increase soil erosion in adjacent habitat. FAA and CCDOA proposals to (1) monitor, control, and eradicate weeds discovered on the property, (2) control erosion and runoff using BMPs as recommended by FAA and BLM, and (3) avoid disturbance of ephemeral washes within the project area to the maximum extent practicable should minimize effects to the tortoise and its habitat.

V. Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, tribal, local government, or private) activities that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The Southern Nevada Regional Heliport will provide expanded recreational services in southern Nevada and accommodate a greater number of people. As the human population continues to increase in southern Nevada, so will the level of impacts to the surrounding natural resources. Traffic will continue to increase on roads and highways in southern Nevada. Increases in traffic may lead to increases in air pollution, fires, and habitat destruction from accidents, the spread of invasive weeds, and increased vehicular encounters with tortoises. As these impacts are identified over time, the Clark County MSHCP should provide a means by which effects from these impacts can be avoided, minimized, or mitigated.

VI. Conclusion

After reviewing the current status of the desert tortoise and its critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the project, as proposed and analyzed, is not likely to jeopardize the continued existence of the threatened desert tortoise (Mojave population). Our conclusion is based on the following:

1. Measures have been proposed by the FAA and CCDOA to substantially minimize the effects of the proposed action;
2. The location of the proposed project is currently experiencing increased levels of disturbance due to its location between I-15 and Las Vegas Boulevard; and

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3. The level of disturbance resulting from the proposed action is small when compared to the rangewide distribution of the species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, as amended, prohibits take (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering (50 CFR § 17.3). "Harass" is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of sections 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The terms and conditions may include: (1) restating measures proposed by the FAA and CCDOA; (2) modifying the measures proposed by the FAA and CCDOA; or (3) specifying additional measures considered necessary by the Service. Where these terms and conditions vary from or contradict the minimization measures proposed under the Description of the Proposed Action, specifications in these terms and conditions would apply. The measures described below are nondiscretionary and must be implemented by the FAA, BLM, or other jurisdictional Federal agencies so that they become binding conditions of any project, contract, grant, or permit issued by the FAA, BLM, or other jurisdictional Federal agencies as appropriate, in order for the exemption in section 7(o)(2) to apply. The Service's evaluation of the effects of the proposed action includes consideration of the measures developed by the FAA and CCDOA, and repeated in the Description of the Proposed Action portion of this biological opinion, to minimize the adverse effects of the proposed action on the desert tortoise. Any subsequent changes in the minimization measures proposed by the FAA and CCDOA may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR § 402.16. These reasonable and prudent measures are intended to clarify or supplement the protective measures that were proposed by the FAA and CCDOA as part of the proposed action.

The FAA, BLM, and other jurisdictional Federal agencies have a continuing duty to regulate the activity that is covered by this incidental take statement. If the FAA, BLM, and other jurisdictional Federal agencies fail to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or fail to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

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I. Amount or Extent of Take Anticipated

Based on the analysis of effects provided above, measures proposed by the FAA and CCDOA, and anticipated project duration the Service anticipates that the following take could occur as a result of the proposed action:

- A. The Service determined that no more than two desert tortoises would be incidentally killed or injured as a result of construction within the 229-acre heliport parcel. Should any desert tortoise be killed or injured in association with the proposed action, all activity in the vicinity of the incident would cease and the project proponent would immediately contact the Service.
- B. All desert tortoises found during clearance surveys or located in harm's way in work areas within the 146-acre construction footprint of the heliport facility may be captured and moved by an authorized biologist. Based on the desert tortoise survey data, the Service estimates that no more than 15 tortoises will be taken (i.e., other than killed or injured) as a result of project construction activities within the 146-acre construction footprint of the heliport facility.
- C. No desert tortoise eggs may be destroyed during project activities, although an unknown number of tortoise eggs may be affected (i.e., moved off the action area into undisturbed habitat by the authorized biologist).
- D. An unknown number of desert tortoises may be preyed upon by ravens or other subsidized desert tortoise predators drawn to trash in the project area.

II. Effect of the Take

In the accompanying biological opinion, the Service has determined that this level of anticipated take will not jeopardize the continued existence of the desert tortoise.

III. Reasonable and Prudent Measures and Terms and Conditions**A. Reasonable and Prudent Measures**

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of desert tortoise:

- 1. The FAA, BLM, other jurisdictional Federal agencies, and CCDOA shall implement measures to minimize injury or mortality of desert tortoises due to surface-disturbing activities, operation of project vehicles or equipment, and capture and handling of tortoises to move them out of harm's way.

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2. The FAA, BLM, other jurisdictional Federal agencies, and CCDOA shall implement measures to minimize predation on desert tortoises by predators drawn to the project area.
3. The FAA, BLM, other jurisdictional Federal agencies, and CCDOA shall implement measures to minimize destruction or degradation of desert tortoise habitat, such as erosion, contamination, introduction of non-native invasive weeds, fragmentation of habitat, disturbance of soil, or crushing of vegetation, due to project activities.
4. The FAA, BLM, other jurisdictional Federal agencies, and CCDOA shall implement measures to ensure compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and reinitiation requirements in this biological opinion.

B. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, FAA, BLM, other jurisdictional Federal agencies must ensure full compliance with the following terms and conditions, which implement the reasonable and prudent measures described above:

1. To implement Reasonable and Prudent Measure Number 1, the FAA, BLM, and other jurisdictional Federal agencies, and CCDOA shall ensure implementation of the following Terms and conditions:
 - a. An authorized desert tortoise biologist shall be hired for the project. In accordance with Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise (Service 1992), an authorized desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the Service. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which should include a minimum of 60 days field experience. All tortoise biologists shall comply with the Service-approved handling protocol (Desert Tortoise Council 1994, revised 1999). In addition, the biologist shall have the ability to recognize and accurately record survey results and must be familiar with the terms and conditions of the biological opinion. Those seeking to be an authorized biologist for the project shall complete the Qualifications Form (Enclosure A) and submit it to the Service for review and approval as appropriate. Allow 30 days for Service review and response.

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- b. Prior to initiation of construction, an authorized biologist or authorized monitor shall present a desert tortoise awareness program to all personnel who will be onsite, including but not limited to contractors, contractors' employees, supervisors, inspectors, and subcontractors. This program will contain information concerning the biology and distribution of the desert tortoise and other sensitive species, their legal status and occurrence in the project area; the definition of "take" and associated penalties; the terms and conditions of this biological opinion; the means by which employees can help facilitate this process; responsibilities of workers, monitors, biologists, and supervisors; hazardous substance spill prevention and containment measures; and reporting procedures to be implemented in case of desert tortoise encounters or non-compliance with this biological opinion. All informed persons shall sign a statement indicating that they have completed the education program and understand fully its provisions.
- c. A temporary desert tortoise-proof fence shall be constructed at the perimeter of all construction-sites associated with the heliport facility, including access roads, tank area, staging areas, and areas to be graded. All surface-disturbing activities associated with construction of the heliport facility shall occur inside this fence. If fence construction occurs during times of higher tortoise activity (approximately March 1 through October 31), an authorized tortoise biologist shall be onsite during construction of the fence to ensure that no tortoises are harmed. If the fence is constructed during times of lower tortoise activity (approximately November 1 through the end of February), an authorized biologist shall thoroughly examine the proposed fence line and burrows for the presence of tortoises and eggs no more than three days before construction commences. Fence construction shall follow the Service's recommended specifications for desert tortoise exclusion fencing (Enclosure B). When construction is complete, the temporary fencing will be removed and a permanent desert tortoise-proof fence shall be constructed around the operations area (the heliport on the outside of the surrounding access road and airfield fence, around the tank site, and along both sides of the access road to the tank site. Tortoise-proof fence design would consist of 1-inch by 2-inch mesh welded wire, of which 12 inches is buried and 24 inches extends above-ground (see Enclosure B for specifications).
- d. Cattle guards or tortoise-proof gates designed to prevent desert tortoises from entering the fenced heliport facility shall be installed at appropriate access points.
- e. Tortoise-proof fences shall be monitored at least quarterly and as soon as possible following precipitation. Maintenance shall include regular

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removal of trash and sediment accumulation, repair of any damage, and restoration of zero clearance between the ground and the bottom of the fence.

- f. An authorized tortoise biologist shall conduct desert tortoise clearance surveys at construction-sites (including tortoise-proof fence construction-sites), staging areas, and access routes prior to the start of construction. No more than 24 hours prior to commencement of surface-disturbing project activities, the project area would be surveyed for desert tortoise using survey techniques that provide 100 percent coverage. Two complete passes shall be conducted. If a desert tortoise is located on the second survey, a third survey will be required. All desert tortoise burrows, and other species' burrows that may be used by tortoises, shall be examined to determine whether the burrow is occupied by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed.
- g. Tortoises and tortoise eggs found during fence construction, clearance surveys, or construction activities shall be removed from the project area. An authorized desert tortoise biologist shall relocate tortoises and eggs to appropriate locations east and/or south of the project site on BLM-administered land. If a suitable location is not available, the authorized desert tortoise biologist shall contact the Service at 702-515-5230 for further instructions on placement of tortoises.
- h. Should a desert tortoise or eggs be encountered during construction, all construction activities in the area shall stop until the authorized desert tortoise biologist removes the eggs or tortoise from the construction-site.
- i. Desert tortoises that are located above ground and need to be moved from the construction-site shall be placed in the shade of a shrub. All desert tortoises removed from burrows shall be placed in an unoccupied burrow of approximately the same size and orientation as the one from which it was removed.
- j. All potential desert tortoise burrows located within the project area shall be excavated by hand by an authorized desert tortoise biologist, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. All desert tortoise handling and removal, and burrow excavations, including nests, shall be conducted by an authorized desert tortoise biologist in accordance with the Service-approved protocol (Desert Tortoise Council 1994, revised 1999). If the Desert Tortoise Council releases a revised protocol for handling of desert tortoises before

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initiation of project activities, the revised protocol shall be implemented for the project area.

- k. Desert tortoises shall be treated in a manner to ensure that they do not overheat, exhibit signs of overheating (e.g., gaping, foaming at the mouth, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises shall be kept shaded at all times until it is safe to release them. No desert tortoise shall be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95 degrees F (35 degrees C). Ambient air temperature shall be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface. No desert tortoise shall be captured if the ambient air temperature is anticipated to exceed 95 degrees F before handling and relocation can be completed. If the ambient air temperature exceeds 95 degrees F during handling or processing, desert tortoises shall be kept shaded in an environment that does not exceed 95 degrees F, and the animals shall not be released until ambient air temperature declines to below 95 degrees F.
2. To implement Reasonable and Prudent Measure Number 2, the FAA, BLM, other jurisdictional Federal agencies, and CCDOA shall ensure implementation of the following term and condition:

A litter control program shall be implemented during construction activities. Trash and food items shall be disposed of properly in predator-proof trash receptacles with resealing lids. During construction activities, trash receptacles will be emptied and waste will be removed from the project area daily.
 3. To implement Reasonable and Prudent Measure Number 3, the FAA, BLM, other jurisdictional Federal agencies, and CCDOA shall ensure implementation of the following terms and conditions:
 - a. Off-road travel outside construction zones shall be prohibited.
 - b. The perimeter of all construction zones shall be fenced with desert tortoise proof fencing, and all construction activity shall occur inside fenced areas.
 - c. After construction of the heliport facility, if additional habitat disturbance is anticipated to occur outside the fenced area within undisturbed portions of the 229-acre parcel, an authorized desert tortoise biologist shall be

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onsite to ensure habitat disturbance is minimized and desert tortoises do not wander into harm's way.

- d. Weed monitoring would be conducted for species identified by the State of Nevada as well as for additional species not on the State of Nevada's Noxious Weed List that are known to invade desert tortoise habitat (such as red brome, *Bromus madritensis* ssp. *rubens*). Should such species be found during monitoring, control and eradication efforts shall be implemented following a CCDOA-prepared, BLM-approved noxious weed plan. Herbicides would not be used in areas occupied by desert tortoises.
- e. Within the project area, soil erosion and storm water runoff will be controlled using BMPs as recommended by the FAA and BLM.
- f. The FAA shall ensure payment by the project proponent, CCDOA, of remuneration fees to be deposited into the Desert Tortoise Public Lands Conservation Fund (account number 730-9999-2315) (section 7 account) for compensation of the loss of desert tortoise habitat as a result of the proposed project. The FAA and Service shall require a receipt of payment from CCDOA, prior to transfer of the land from BLM to CCDOA.

The proposed project will disturb 146 acres of desert tortoise habitat presently administered by the Federal government (BLM). However, the FAA and CCDOA propose to pay disturbance fees for the entire 229-acre parcel, in the event that the final project design requires disturbance of more than 146 acres (P. Adams, May 29, 2008 email correspondence). The current compensation rate for disturbance to desert tortoise habitat in the project area is \$753 per acre. Each year these fees will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U). Information on the CPI-U can be found on the internet at: <http://stats.bls.gov/news.release/cpi.nr0.htm>. The next rate adjustment will occur on March 1, 2009. The section 7 payments shall be accompanied by the attached Section 7 Fee Payment Form (Enclosure C), and completed by the payee. Payment would be by certified check or money order payable to Clark County and delivered to:

Clark County Desert Conservation Program
 c/o Dept. of Air Quality and Environmental Management
 Clark County Government Center
 500 S. Grand Central Parkway, first floor (front counter)
 Las Vegas, Nevada 89106
 (702) 455-5821

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If less than 229 acres of tortoise habitat are disturbed, the FAA and CCDOA may submit a request to the Service for a refund of fees paid for acreage of desert tortoise habitat that was not disturbed.

4. To implement Reasonable and Prudent Measure Number 4, the FAA, BLM, other jurisdictional Federal agencies, and CCDOA shall ensure implementation of the following terms and conditions:
 - a. The CCDOA shall designate an authorized desert tortoise biologist who will be responsible for overseeing compliance with protective stipulations for the desert tortoise and coordinating with the Service. The authorized biologist shall have the authority to halt activities that may be in violation of the stipulations.
 - b. The authorized desert tortoise biologist shall submit a closeout report to the Service's Nevada Fish and Wildlife Office in Las Vegas, no later than three months after the project is complete documenting the following:
 - i. The number of tortoises taken and the form of take (e.g., captured and displaced, killed, injured, or harassed by other means);
 - ii. An assessment of the effectiveness of the protective measures outlined as the terms and conditions in this biological opinion;
 - iii. Information on each desert tortoise handled. Information will include the following: location (GPS), date and time of observation; whether the tortoise was handled; general health and whether it voided its bladder; location tortoise was moved from and location moved to; and unique physical characteristics of each tortoise;
 - iv. Information on any other desert tortoise sign (including burrows, scat, shell fragments) observed in the action area and their location (GPS);
 - v. This closeout report will also describe if the project was implemented as described in the biological opinion or if changes to the project occurred during implementation.
 - c. The authorized desert tortoise biologist shall notify the Service of any desert tortoise death or injury due to project implementation by close of

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business on the following work day by calling the Las Vegas office at 702-515-5230.

IV. Reporting Requirements

Upon locating a dead or injured desert tortoise within the action area, notification must be made to the Service's Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230. Care should be taken in handling sick or injured desert tortoises to ensure effective treatment for handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of injured desert tortoises or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by the Service to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed. All deaths, injuries, and illnesses of desert tortoises, whether associated with project activities or not, will be summarized in an annual report.

The following actions should be taken for injured or dead tortoises if directed by the Service:

1. Injured desert tortoises shall be delivered to any qualified veterinarian for appropriate treatment or disposal.
2. Dead desert tortoises suitable for preparation as museum specimens shall be frozen immediately and provided to an institution holding appropriate Federal and State permits per their instructions.
3. Should no institutions want the desert tortoise specimens, or if it is determined that they are too damaged (crushed, spoiled, *etc.*) for preparation as a museum specimen, then they may be buried away from the project area or cremated, upon authorization by the Service.
4. BLM or project proponent shall bear the cost of any required treatment of injured desert tortoises, euthanasia of sick desert tortoises, or cremation of dead desert tortoises.
5. Should sick or injured desert tortoises be treated by a veterinarian and survive, they may be transferred as directed by the Service.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service offers the following conservation recommendations:

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- We recommend that construction activities occur from November through February, during which time tortoises are generally less active, to further minimize or avoid impacts to the desert tortoise.
- We recommend avoiding disturbance of desert tortoise habitat within the portion of the 229-acre parcel that would be located outside the permanently-fenced operations area.

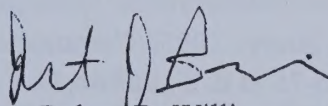
In order for the Service to be kept informed of actions minimizing or avoiding adverse impacts, or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION

This concludes formal consultation on the actions outlined in your request dated August 10, 2007. As required by 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over an action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If we can be of any further assistance, please contact Jeri Krueger in the Nevada Fish and Wildlife Office in Las Vegas at (702) 515-5230. Please reference File Number 84320-2008-F-0005 regarding any future correspondence relating to this consultation.

Sincerely,


For Robert D. Williams
Field Supervisor

Enclosures

cc:

Administrator, Desert Conservation Program, Clark County Department of Air Quality and Environmental Management, Las Vegas, Nevada
Assistant Field Manager, Division of Recreation and Renewable Resources, Las Vegas Field Office, Bureau of Land Management, Las Vegas, Nevada
Administrator, Clark County Department of Aviation, Las Vegas, Nevada

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Enclosure A. Statement of Qualifications for Desert Tortoise Biologists and Monitors**GENERAL DESERT TORTOISE QUALIFICATIONS STATEMENT**

This form should be used to provide your qualifications to agency officials if you monitor project activities or intend to handle or survey desert tortoises during construction or other projects authorized under Sections 7 (Biological Opinions) or 10 (HCPs) of the Endangered Species Act. If you seek approval to attach/remove/insert any devices or equipment to/into desert tortoises, withdraw blood, or conduct other procedures on desert tortoises, a recovery permit or similar authorization may be required.

Application for a recovery permit requires completion of Form 3-200-55, which can be downloaded at <http://www.fws.gov/forms/3-200-55.pdf>. Supplemental information for the recovery permit application should be provided with the form, *Statement of Skills and Experience with Specialized Desert Tortoise Procedures*, which is available from a U.S. Fish and Wildlife Service (USFWS) Field Office.

1. Contact Information:

Name	
Address	
City, State, Zip Code	
Phone Number(s)	
Email Address	

2. Date of Statement:**3. States in which project occurs (check all that apply):**

☐ California ☐ Nevada ☐ Utah ☐ Arizona

4. Please provide information on the project:

USFWS Biological Opinion or HCP No.		Date:
Project Name		
Federal Agency		
Proponent or Contractor		

5. **Education:** Provide up to three schools, listing most recent first:

Institution	Dates attended	Major/Minor	Degree received
a.			
b.			
c.			

6. **Desert Tortoise Training.**

Name/Type of Training	Dates (From/To)	Location	Instructor/Sponsor
1.			
2.			
3.			
4.			

7. **Experience** – Include only those positions relevant to the requested work with desert tortoises. Distinguish between Mojave desert tortoise and other experience. Include only your experience, not information for the project you worked on (e.g., if 100 tortoises were handled on a project and you handled 5 of those tortoises, include only those 5). List most recent experience first. Handling a Mojave desert tortoise must be authorized by a Biological Opinion or other permit and reported to the USFWS. Information provided in this section will be used by the USFWS to track the numbers of tortoises affected by previous projects (baseline). **Be sure to include a project contact that can verify your skills and experience.** Attach additional sheets as necessary.

Have you been previously approved to conduct field work with desert tortoises?

If yes, provide the following:

USFWS File No. (if known)	
Date of Approval	
Approving Office	
Project Name	
What were you approved to do?	

Experience by project and activity:

Project Name, Biological Opinion or Permit No., Job Title	Dates (From- To)	Project Contact- name, phone no., & Email address		Conduct clearance surveys (Hrs/Days)	Excavate tortoise burrows (No.)	Locate tortoises (No. < 100mm, No. ≥ 100mm)	Relocate tortoises (No.)	Locate, excavate, and relocate tortoise nests (No.)	Construct artificial burrows (No.)	Present desert tortoise awareness training (No.)	Monitor project equipment and activities (Hrs/Days)	Oversee project compliance (Hrs/Days)	Supervise field staff (Hrs/Days)	Collect data on tortoise sign and activity (Hrs/Days)	Tortoise fence inspection (Hrs/Days)	Other (specify)
1.																
2.																
3.																
4.																
5.																
6.																
Are you seeking approval to independently conduct this activity (Y or N)?																

Summary of experience:

a. Total time spent for all desert tortoise-related field activities (referenced above):

Specify: Total number of hours:

-OR Total number of 8-hour days:

b. Total number of miles/kilometers walked conducting survey transects:

c. Total number of wild, free-ranging desert tortoises you personally handled:

<100 mm:

≥100 mm:

9. References. Provide 3 references that can verify your field qualifications and skills. Include project managers, training instructors, biologists, agency representatives, etc. Avoid using co-workers or employers:

Name	Employer/Position	Address/Location	Phone Number	Email
1.				
2.				
3.				

I certify that the information submitted in this form is complete and accurate to the best of my knowledge and belief.
I understand that any false statement herein may subject me to the criminal penalties of 18 U.S.C. Ch.47, Sec. 1001.

Signed: _____

Date: _____

ENCLOSURE B
RECOMMENDED SPECIFICATIONS FOR
DESERT TORTOISE EXCLUSION FENCING
September 2005

These specifications were developed to standardize fence materials and construction procedures to confine tortoises or exclude them from harmful situations, primarily roads and highways. Prior to commencing any field work, all field workers should comply with all stipulations and measures developed by the jurisdictional land manager and the U.S. Fish and Wildlife Service for conducting such activities in desert tortoise habitat, which will include, at a minimum, completing a desert tortoise education program.

FENCE CONSTRUCTION

Materials

Fences should be constructed with durable materials (*i.e.*, 16 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Fence material should consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in width. Other materials include: Hog rings, steel T-posts, and smooth or barbed livestock wire. Hog rings should be used to attach the fence material to existing strand fence. Steel T-posts (5 to 6-foot) are used for new fence construction. If fence is constructed within the range of bighorn sheep, 6-foot T-posts should be used (see New Fence Construction below). Standard smooth livestock wire fencing should be used for new fence construction, on which tortoise-proof fencing shall be attached.

Retrofitting Existing Livestock Fence

Option 1 (see enclosed drawing). Fence material should be buried a minimum of 12 inches below the ground surface, leaving 22-24 inches above ground. A trench should be dug or a cut made with a blade on heavy equipment to allow 12 inches of fence to be buried below the natural level of the ground. The top end of the tortoise fence should be secured to the livestock wire with hog rings at 12 to 18-inch intervals. Distances between T-posts should not exceed 10 feet, unless the tortoise fence is being attached to an existing right-of-way fence that has larger interspaces between posts. The fence must be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed and secured to the top wire and T-posts, excavated soil will be replaced and compacted to minimize soil erosion.

Option 2 (see enclosed drawing). In situations where burying the fence is not practical because of rocky or undigable substrate, the fence material should be bent at a 90° angle to produce a lower section approximately 14 inches wide which will be placed parallel to, and in direct contact with, the ground surface; the remaining 22-inch wide upper section should be placed vertically against the existing fence, perpendicular to the ground and attached to the existing fence with hog rings at 12 to 18-inch intervals. The lower section in contact with the ground

should be placed within the enclosure in the direction of potential tortoise encounters and level with the ground surface. Soil and cobble (approximately 2 to 4 inches in diameter; can use larger rocks where soil is shallow) should be placed on top of the lower section of fence material on the ground covering it with up to 4 inches of material, leaving a minimum of 18 inches of open space between the cobble surface and the top of the tortoise-proof fence. Care should be taken to ensure that the fence material parallel to the ground surface is adequately covered and is flush with the ground surface.

New Fence Construction

Options 1 or 2 should be followed except in areas that require special construction and engineering such as wash-out sections (see below). T-posts should be driven approximately 24 inches below the ground surface spaced approximately 10 feet apart. Livestock wire should be stretched between the T-posts, 18 to 24 inches above the ground to match the top edge of the fence material; desert tortoise-proof fencing should be attached to this wire with hog rings placed at 12 to 18-inch intervals. Smooth (barb-less) livestock wire should be used except where grazing occurs.

If fence is constructed within the range of bighorn sheep, two smooth-strand wires are required at the top of the T-post, approximately 4 inches apart, to make the wire(s) more visible to sheep. A 20 to 24-inch gap must exist between the top of the fence material and the lowest smooth-strand wire at the top of the T-post. The lower of the top two smooth-strand wires must be at least 43 inches above the ground surface.

(72-inch T-posts: 24 inches below ground + 18 inches of tortoise fence above ground + 20 to 24-inch gap to lower top wire + 4 inches to upper top wire = 66 to 70 inches).

INSPECTION OF DESERT TORTOISE BARRIERS

The risk level for a desert tortoise encountering a breach in the fence is greatest in the spring and fall, particularly around the time of precipitation including the period during which precipitation occurs and at least several days afterward. All desert tortoise fences and cattleguards should be inspected on a regular basis sufficient to maintain an effective barrier to tortoise movement. Inspections should be documented in writing and include any observations of entrapped animals; repairs needed including bent T-posts, leaning or non-perpendicular fencing, cuts, breaks, and gaps; cattleguards without escape paths for tortoises or needed maintenance; tortoises and tortoise burrows including carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance.

All fence and cattleguard inventories should be inspected at least twice per year. However, during the first 2 to 3 years all inspections will be conducted quarterly at a minimum, to identify and document breaches, and problem areas such as wash-outs, vandalism, and cattleguards that fill-in with soil or gravel. GPS coordinates and mileages from existing highway markers should be recorded in order to pinpoint problem locations and build a database of problem locations that may require more frequent checking. Following 2 to 3 years of initial inspection, subsequent

inspections should focus on known problem areas which will be inspected more frequently than twice per year. In addition to semi-annual inspections, problem areas prone to wash-outs should be inspected following precipitation that produces potentially fence-damaging water flow. A database of problem areas will be established whereby checking fences in such areas can be done efficiently.

REPAIR AND MAINTENANCE OF DESERT TORTOISE BARRIERS

Repairs of fence wash-outs: (1) realign the fence out of the wash if possible to avoid the problem area, or (2) re-construct tortoise-proof fencing using techniques that will ensure that an effective desert tortoise barrier is established that will not require frequent repairs and maintenance.

Gaps and breaks will require either: (a) repairs to the existing fence in place, with similar diameter and composition of original material, (b) replacement of the damaged section to the nearest T-post, with new fence material that original fence standards, (c) burying fence, and/or (d) restoring zero ground clearance by filling in gaps or holes under the fence and replacing cobble over fence constructed under Option 2. Tortoise-proof fencing should be constructed and maintained at cattleguards to ensure that a desert tortoise barrier exists at all times.

All fence damage should be repaired in a timely manner to ensure that tortoises do not travel through damaged sections. Similarly, cattleguards will be cleaned out of deposited material underneath them in a timely manner. In addition to periodic inspections, debris should be removed that accumulates along the fence. All cattleguards that serve as tortoise barriers should be installed and maintained to ensure that any tortoise that falls underneath has a path of escape without crossing the intended barrier.

ENCLOSURE C
SECTION 7 FEE PAYMENT FORM
Entire form is to be completed by project proponent

Biological Opinion File Number: 84320-2008-0005

Fish and Wildlife Service Office that issued the Opinion:

Nevada Fish and Wildlife Office, Reno, Nevada

Species: Desert tortoise (*Gopherus agassizii*)

Project: _____

Number of acres anticipated to be disturbed: 229

County - Nevada: Clark

Fee rate (per acre): \$ 753 (until March 1, 2009)

Total payment required: \$ 172,437 (until March 1, 2009)

Amount of payment received: \$ _____ **Date of receipt:** _____

Check or money order number: _____

Project proponent: Clark County Department of Aviation

Telephone number: _____

Authorizing agencies: Federal Aviation Administration

Make checks payable to: Clark County Treasurer

Deliver check to: Clark County Desert Conservation Program
c/o Dept. of Air Quality and Environmental Management
Clark County Government Center
500 S. Grand Central Parkway, first floor (front counter)
Las Vegas, Nevada 89106
(702) 455-3536

ENCLOSURE D

RECOMMENDED SPECIFICATIONS FOR DESERT TORTOISE EXCLUSION FENCING

September 2005

These specifications were developed to standardize fence materials and construction procedures to confine tortoises or exclude them from harmful situations, primarily roads and highways. Prior to commencing any field work, all field workers should comply with all stipulations and measures developed by the jurisdictional land manager and the U.S. Fish and Wildlife Service for conducting such activities in desert tortoise habitat, which will include, at a minimum, completing a desert tortoise education program.

FENCE CONSTRUCTION

Materials

Fences should be constructed with durable materials (*i.e.*, 16 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Fence material should consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in width. Other materials include: Hog rings, steel T-posts, and smooth or barbed livestock wire. Hog rings should be used to attach the fence material to existing strand fence. Steel T-posts (5 to 6-foot) are used for new fence construction. If fence is constructed within the range of bighorn sheep, 6-foot T-posts should be used (see New Fence Construction below). Standard smooth livestock wire fencing should be used for new fence construction, on which tortoise-proof fencing would be attached.

Retrofitting Existing Livestock Fence

Option 1 (see enclosed drawing). Fence material should be buried a minimum of 12 inches below the ground surface, leaving 22-24 inches above ground. A trench should be dug or a cut made with a blade on heavy equipment to allow 12 inches of fence to be buried below the natural level of the ground. The top end of the tortoise fence should be secured to the livestock wire with hog rings at 12 to 18-inch intervals. Distances between T-posts should not exceed 10 feet, unless the tortoise fence is being attached to an existing right-of-way fence that has larger interspaces between posts. The fence must be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed and secured to the top wire and T-posts, excavated soil will be replaced and compacted to minimize soil erosion.

Option 2 (see enclosed drawing). In situations where burying the fence is not practical because of rocky or undigable substrate, the fence material should be bent at a 90° angle to produce a lower section approximately 14 inches wide which will be placed parallel to, and in direct contact with, the ground surface; the remaining 22-inch wide upper section should be placed vertically against the existing fence, perpendicular to the ground and attached to the existing fence with hog rings at 12 to 18-inch intervals. The lower section in contact with the ground should be placed within the enclosure in the direction of potential tortoise encounters and level with the ground surface. Soil and cobble (approximately 2 to 4 inches in diameter; can use larger

rocks where soil is shallow) should be placed on top of the lower section of fence material on the ground covering it with up to 4 inches of material, leaving a minimum of 18 inches of open space between the cobble surface and the top of the tortoise-proof fence. Care should be taken to ensure that the fence material parallel to the ground surface is adequately covered and is flush with the ground surface.

New Fence Construction

Options 1 or 2 should be followed except in areas that require special construction and engineering such as wash-out sections (see below). T-posts should be driven approximately 24 to 30 inches below the ground surface spaced approximately 10 feet apart. Livestock wire should be stretched between the T-posts, 18 to 24 inches above the ground to match the top edge of the fence material; desert tortoise-proof fencing should be attached to this wire with hog rings placed at 12 to 18-inch intervals. Smooth (barb-less) livestock wire should be used except where grazing occurs.

If fence is constructed within the range of bighorn sheep, two smooth-strand wires are required at the top of the T-post, approximately 4 inches apart, to make the wire(s) more visible to sheep. A 20 to 24-inch gap must exist between the top of the fence material and the lowest smooth-strand wire at the top of the T-post. The lower of the top two smooth-strand wires must be at least 43 inches above the ground surface.

(72-inch T-posts: 24 inches below ground + 18 inches of tortoise fence above ground + 20 to 24-inch gap to lower top wire + 4 inches to upper top wire = 66 to 70 inches).

INSPECTION OF DESERT TORTOISE BARRIERS

The risk level for a desert tortoise encountering a breach in the fence is greatest in the spring and fall, particularly around the time of precipitation including the period during which precipitation occurs and at least several days afterward. All desert tortoise fences and cattleguards should be inspected on a regular basis sufficient to maintain an effective barrier to tortoise movement. Inspections should be documented in writing and include any observations of entrapped animals; repairs needed including bent T-posts, leaning or non-perpendicular fencing, cuts, breaks, and gaps; cattleguards without escape paths for tortoises or needed maintenance; tortoises and tortoise burrows including carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance.

All fence and cattleguard inventories should be inspected at least twice per year. However, during the first 2 to 3 years all inspections will be conducted quarterly at a minimum, to identify and document breaches, and problem areas such as wash-outs, vandalism, and cattleguards that fill-in with soil or gravel. GPS coordinates and mileages from existing highway markers should be recorded in order to pinpoint problem locations and build a database of problem locations that may require more frequent checking. Following 2 to 3 years of initial inspection, subsequent inspections should focus on known problem areas which will be inspected more frequently than twice per year. In addition to semi-annual inspections, problem areas prone to wash-outs should be inspected following precipitation that produces potentially fence-damaging water flow. A

database of problem areas will be established whereby checking fences in such areas can be done efficiently.

REPAIR AND MAINTENANCE OF DESERT TORTOISE BARRIERS

Repairs of fence wash-outs: (1) realign the fence out of the wash if possible to avoid the problem area, or (2) re-construct tortoise-proof fencing using techniques that will ensure that an effective desert tortoise barrier is established that will not require frequent repairs and maintenance.

Gaps and breaks will require either: (a) repairs to the existing fence in place, with similar diameter and composition of original material, (b) replacement of the damaged section to the nearest T-post, with new fence material that original fence standards, (c) burying fence, and/or (d) restoring zero ground clearance by filling in gaps or holes under the fence and replacing cobble over fence constructed under Option 2. Tortoise-proof fencing should be constructed and maintained at cattleguards to ensure that a desert tortoise barrier exists at all times.

All fence damage should be repaired in a timely manner to ensure that tortoises do not travel through damaged sections. Similarly, cattleguards will be cleaned out of deposited material underneath them in a timely manner. In addition to periodic inspections, debris should be removed that accumulates along the fence. All cattleguards that serve as tortoise barriers should be installed and maintained to ensure that any tortoise that falls underneath has a path of escape without crossing the intended barrier.

Appendix J. Visual Resources

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Form 8400-4
(September 1985)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 3/7/2008 1:30 PM

District LAS VEGAS

Resource Area

Activity (program) HELIPORT

SECTION A. PROJECT INFORMATION

1. Project Name SOUTHERN NV REGIONAL HELIPORT	4. Location Township _____ Range _____ Section UTM 661606 3975071	5. Location Sketch Photos included
2. Key Observation Point #1 LAS VEGAS BLVD. / LOOKING SOUTH		
3. VRM Class TII		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	STEEP RIDGELINE, GENTLE ALLUVIAL FANS, ROLLING TOPOGRAPHY	NUMEROUS SMALL SHRUBS, PATCHY	LINEAR, REGULAR ROAD, HIGHWAY, FENCES
LINE	IRREGULAR HARDEDGED ROLLING HORIZONTAL	COMPLEX - BUSHY. INTERSPERSED WITH VERTICAL YUCCA	STRAIGHT HARD LINES VERTICAL CELL TOWER
COLOR	TAN SOILS, GRAY AND BLACK ROCK	DULL - GRAY GREEN SOME TANS	SHINY REFLECTIVE BLACK RD. DULL TAN DIRT ROADS.
TEXTURE	DISCONTINUOUS	REGULAR, MEDIUM DENSITY	SMOOTH

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	FLAT, HORIZONTAL CUTS	GEOMETRIC - LINEAR	BLOCKY, ANGULAR, LINEAR NO SKYLINE VIEW, AGAINST HILLSIDE
LINE	CURVED ROAD STRAIGHT, BOXY, CUTS	STRONG SHARP EDGE ALONG CLEARING	HARDEDGES STRAIGHT VERTICAL / HORIZONTAL
COLOR	LIGHT TAN, BUFF	—	DULL BLACKS, GRAYS, TANS / REFLECTIVE WINDOWS
TEXTURE	SMOOTH	PATCHY	SMOOTH, SHINY

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

ELEMENTS	DEGREE OF CONTRAST	FEATURES												2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)	3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)	Evaluator's Names	Date
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)							
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None				
Form		X				X					X						
Line		X				X					X						
Color			X					X			X						
Texture			X				X						X				

STEVE LESLIE

SWCA ENV. CONSULTANTS

3/7/2008

SECTION D. (Continued)

Comments from item 2.

The proposed heliport would create a contrast that begins to attract attention. The viewer TRAVELING NORTH will generally ~~have more~~ see the project a limited amount of time. (1-2 MINUTES).

The proposed project is set against the backdrop of the steep Hillside. This backdrop would result in a less prominent contrast.

Additional Mitigating Measures (See item 3)

- When designing ^{the} buildings - Using NATURAL colors that complement the backdrop would further reduce contrast.
- Choosing Native plant species will enhance vegetation and landscaping associated w/ the project reducing the sharp edges that may result from construction.
- Tone down fresh cut soil/rock surfaces with natural color emulsion spray such as permeon.

Form 8400-4
(September 1985)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date 3/7/2008 1:45 pm
 District LAS VEGAS
 Resource Area _____
 Activity (program) HELIPORT

SECTION A. PROJECT INFORMATION

1. Project Name <u>SOUTHERN NV REGIONAL HELIPORT</u>	4. Location Township _____ Range _____ Section <u>UTM 660767</u> <u>3973559</u>	5. Location Sketch <u>PHOTOS INCLUDED</u>
2. Key Observation Point <u>#2 I15 /VIEW NORTH</u>		
3. VRM Class <u>III</u>		

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	<u>GENTLE ALLUVIAL FANS AND ROLLING TOPOGRAPHY</u>	<u>NUMEROUS SMALL SHRUBS</u>	<u>LINEAR REGULAR ROAD & SQUARE SIGNS</u> <u>PATCHY LAS VEGAS VALLEY</u>
LINE	<u>ROLLING HORIZONTAL LINES</u> <u>JAGGED GEOLOGY</u>	<u>BUSHY</u>	<u>STRAIGHT</u> <u>PATCHY COMPLEX</u>
COLOR	<u>TANS / GRAYS to WHITE</u>	<u>DULL GRAY GREEN</u> <u>TAN GRASSES</u>	<u>SHINY BLACK / WHITE CUT SOILS</u> <u>DULL COMPLEX COLOR IN VALLEY</u>
TEXTURE	<u>DISCONTINUOUS</u> <u>HAZY TODAY</u>	<u>MODERATE DENSITY</u>	<u>IRREGULAR to SMOOTH</u>

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	<u>FLAT, HORIZONTAL CUT</u>	<u>GEOMETRIC, LINEAR</u>	<u>BLOCKY ANGULAR</u> <u>UP AGAINST HILLSIDE</u>
LINE	<u>BOXY</u>	<u>STRONG SHARP EDGE</u>	<u>VERTICAL, HORIZONTAL</u>
COLOR	<u>LIGHT TAN</u>		<u>DULL TANS, GRAYS</u> <u>REFLECTIVE WINDOWS</u>
TEXTURE	<u>SMOOTH</u>	<u>PATCHY</u>	<u>SMOOTH, SHINY</u>

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)				
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)								
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None					
ELEMENTS	Form		X						X					X				
	Line		X															
	Color																	
	Texture																	

3. Additional mitigating measures recommended
☐ Yes ☐ No (Explain on reverse side)
SEE KOP #1

Evaluator's Names STEVE LESLIE Date 3/7/2008
SWCA ENV. CONSULTANTS

SECTION D. (Continued)

Comments from item 2.

The proposed heliport would create a contrast that begins to attract attention. The viewer traveling south will have only a brief glimpse of the proposed project (less than 1 minute).

The converging lines of the characteristic landscape leads the eye of casual viewer to LAS VEGAS VALLEY AND ITS associated development. Not the proposed project

Additional Mitigating Measures (See item 3)

SEE KOP # 1

Appendix K. Agencies and Persons Consulted

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Appendix K. Agencies and Persons Consulted

The following is a list of agencies, persons, and Native American Tribes and Bands consulted during the preparation of the Final EA.

Rebecca L. Palmer
State Historic Preservation Officer
Department of Cultural Affairs
100 N. Stewart St.
Carson City, NV 89701

Jeri Krueger
Fish and Wildlife Biologist
Fish and Wildlife Service
Southern Nevada Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

Holly Johnson
Environmental Planner
Southern Nevada Water Authority
Department of Groundwater Resources &
Las Vegas Valley Water District
1900 E. Flamingo
Las Vegas, NV 89119

Paul Joly
Aviation Safety Manager
Federal Aviation Administration
Las Vegas - Flight Standards District Office
7181 Amigo Street, Suite 180
Las Vegas, NV 89119

Jon Holman
Operations Manager
Federal Aviation Administration
Las Vegas Air Traffic Control
699 Wright Brothers Lane
Las Vegas, NV 89119

D. Bradford Hardenbrook
Supervisory Habitat Biologist
Nevada Department of Wildlife
Southern Region
4747 Vegas Drive
Las Vegas, NV 89108

Lewis Wallenmeyer
Director
Clark County Department of Air Quality &
Environmental Management
500 S Grand Central Parkway, 1st Floor
Las Vegas, NV 89155

Mary Kay Peck, FAICP
City Manager
City of Henderson
240 Water Street
Henderson, NV 89009

Nova Blazej
Manager
US Environmental Protection Agency, Region IX
Environmental Review Office
75 Hawthorne Street
San Francisco, CA 94105

William K. Dickinson
Superintendent
National Park Service
Lake Mead National Recreation Area
601 Nevada Way
Boulder City, Nevada 89005

Clark County Department of Aviation

William J. Liebhauser
Director
Bureau of Reclamation
Lower Colorado Regional Office
Resources Management Office
PO Box 61470
Boulder City, NV 89006

Charles Wood, Chair
Chemehuevi Indian Tribe
PO Box 1976
Havas Lake, CA 92363

Nora McDowell, Chair
Fort Mojave Indian Tribe
500 Merriman Ave.
Needles, CA 92363

Charles Vaughn, Chair
Hualapai Tribal Council
PO Box 179
Peach Springs, AZ 86434

Gary Tom, Chair
Kaibab Paiute Tribe
HC 65, Box 2
Fredonia, AZ 86022

Alfreda Mitre, Chair
Las Vegas Paiute Tribe
One Paiute Drive
Las Vegas, NV 89106

Darren Daboda, Chair
Moapa Band of Paiutes
PO Box 607
Moapa, NV 89025

Krista Coulter
Nevada State Clearinghouse
Department of administration
209 E. Musser Street, Room 200
Carson City, NV 89701

Jeanine Borchardt, Chair
Indian Peaks Band
Paiute Indian Tribes of Utah
440 North Paiute Drive
Cedar City, UT 84720

Phil Pikyavit, Chair
Kanosh Band
Paiute Indian Tribes of Utah
PO Box 101
Kanosh, UT 84637

Cindy Charles, Chair
Koosharem Band
Paiute Indian Tribes of Utah
440 North Paiute Drive
Cedar City, UT 84720

Glenn Rogers, Chair
Shivwits Band
Paiute Indian Tribes of Utah
370 North 400 West, #2
St. George, UT 84770

Dean Mike, Chair
Twenty-Nine Palms Band of Mission Indians
46-200 Harrison Place
Coachella, CA 92236

Daniel Eddy, Jr., Chair
Colorado River Indian Tribes
Rt 1, Box 23-B
Parker, AZ 85344

Richard Arnold, Chair
Pahrump Paiute Tribe
PO Box 3411
Pahrump, NV 89041

Lora Tom, Chair
Paiute Indian Tribe of Utah
440 N. Paiute Drive
Cedar City, UT 84720-2613

Alex Shepherd, Chair
Cedar Band
Paiute Indian Tribe of Utah
5267 West 3700 South
Cedar City, UT 84720

Appendix L. Public Involvement and Responses to Comments on Draft EA

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Appendix L. Public Involvement and Responses to Comments on Draft EA

This appendix documents the public involvement process as well as agency and public comments received and responses to comments received during the 36-day public comment period (open from Friday, April 4, 2008 through Friday, May 9, 2008), as outlined below:

- Advertisements and affidavits of publication
- Public Information Workshop
- Public Hearing, including the presentation and the transcript of the proceedings
- Comments received on the Draft EA and responses

L.1 Advertisements and Affidavits of Publication

The Clark County Department of Aviation (CCDOA) published a "Notice of Availability, Public Comment Period, Public Workshop, and Public Hearing for the Draft Environmental Assessment for a Southern Nevada Regional Heliport" in the Las Vegas Regional-Journal/Las Vegas Sun on March 30th, April 13th, and April 27th, 2008. A copy of the advertisement and affidavits of publication, as published in the *Nevada* and *Legal* sections of the Las Vegas Review-Journal/Las Vegas Sun, are provided as **Attachment L-1**.

The Draft EA was available for review by the public at local public libraries, airports, the FAA Western-Pacific Regional Office, the BLM Las Vegas Field Office during normal business hours, as well as on the project website (<http://www.ricondoprojects.com/heliport>).

L.2 Public Information Workshop

A Public Information Workshop was hosted by the CCDOA on Thursday, May 1, 2008 from 4:00 p.m. to 7:00 p.m. in the cafeteria of the Clark County Government Center. The Workshop attendees (other than CCDOA staff and members of the consultant team) included members of the public and a Grand Canyon helicopter air tour operator.

Two written comments were submitted to the CCDOA at the Public Information Workshop. Copies of the completed comment forms submitted at the Workshop and responses to those comments are provided in **Section L.4**.

L.3 Public Hearing

A Public Hearing was held before the Clark County Board of County Commissioners at 10 a.m. on Tuesday, May 6, 2008 at the Clark County Government Center. The Public Hearing transcript (including a copy of the presentation given by the CCDOA to the members of the Board of County Commissioners) and responses to comments received at the Public Hearing, as needed, are provided in **Section L.4.1.3**. Four (4) individuals provided verbal comments during the Public Hearing.

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AFFP DISTRICT COURT
Clark County, Nevada

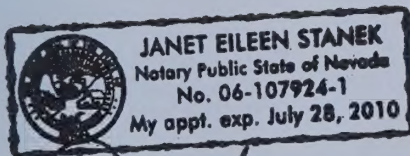
AFFIDAVIT OF PUBLICATION

STATE OF NEVADA)
COUNTY OF CLARK) SS:

Stacey M Lewis, being 1st duly sworn, deposes and says: That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for,
CC DEPT AVIATION 2615211CC 3756996

Was continuously published in said Las Vegas Review-Journal and/or Las Vegas Sun in 1 edition(s) of said newspaper issued from 03/30/2008 to 03/30/2008, on the following days:

03/30/2008



Signed: _____

Stacey M. Lewis

SUBSCRIBED AND SWORN BEFORE ME THIS, THE

21st Day of April 2008.

Notary Public _____

Janet Eileen Stanek



Clark County Department of Aviation

Notice of Availability, Public Comment Period, Public Information Workshop, and Public Hearing for the Draft Environmental Assessment for a Southern Nevada Regional Heliport

Pursuant to Title 49, United States Code, § 47106(c)(1)(A), notice is hereby given that Clark County, Nevada proposes to build and operate the Southern Nevada Regional Heliport (Heliport) south of Sloan, Nevada immediately east of Interstate Highway 15. The Clark County Department of Aviation (CCDOA) is requesting public input on the Draft Environmental Assessment (Draft EA) for the construction and operation of the Heliport and associated utilities. The Draft EA discloses the potential economic, social, and environmental impacts of the proposed development. The proposed build alternative (referred to as the South of Sloan site) is located east of Interstate 15 and Las Vegas Boulevard South, approximately 5.5 miles south of St. Rose Parkway (a portion of Assessor Parcel No. 204-01-000-004). The development of the Heliport as proposed would provide a facility that would satisfy existing and future needs of the Grand Canyon air tour helicopter operators in a manner that is compatible with the urbanized development in Clark County. Such development includes, but is not limited to: site preparation; grading and installation of drainage facilities; and paving, marking and lighting of helicopter parking areas, taxiways and four Final Approach and Takeoff Areas. The proposed Heliport will accommodate approximately 80 based helicopters with expansion capability for additional helicopters. The Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflown by commercial helicopters providing tours of the Grand Canyon which originate at McCarran International Airport.

A Public Information Workshop will be hosted on Thursday, May 1, 2008, from 4:00 PM to 7:00 PM, Pacific Daylight Time, at the Clark County Government Center, Cafeteria, 500 S. Grand Central Parkway, Las Vegas, NV. Members of the public are invited to attend the workshop to obtain additional information and to ask questions regarding the proposed Heliport.

A formal Public Hearing on the Draft EA will be held during the Clark County Board of Commissioners' regularly scheduled meeting on Tuesday, May 6, 2008, at 10:00 AM, at the Clark County Government Center, Commission Chambers, 500 S. Grand Central Parkway, Las Vegas, NV. Oral and written comments will be accepted at the Public Hearing.

Beginning April 4, 2008, the Draft EA will be available for public review at www.ncondoprojects.com/heliport, or during normal business hours at the following locations:

Alante Library	2400 Deer Springs Wy.	Boulder City Library	701 Adams Blvd.
Clark County Law Library	309 S. Third St.	Clark County Library	1401 E. Flamingo Rd.
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Lydia Malcolm Library	2960 Sunridge Heights Pkwy.	Meadows Library	300 W. Boston Ave.
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Rainbow Library	3150 N. Buffalo Dr.	Sahara West Library	9600 West Sahara Ave.
Spring Valley Library	4280 South Jones Blvd.	Summerlin Library	1771 Inner Circle Dr.
Sunrise Library	5400 Harris Ave.	UNLV Library	4505 S. Maryland Pkwy.
West Charleston Library	6301 W. Charleston Blvd.	West Las Vegas Library	951 W. Lake Mead Blvd.
Whitney Library	5175 E. Tropicana Ave.		

Clark County Department of Aviation, Planning Offices, 4th Floor

Henderson Executive Airport, Clark County Department of Aviation, Customer Service Counter

North Las Vegas Airport, Clark County Department of Aviation, Administration Offices

BLM - Las Vegas Field Office, 4701 N. Torrey Pines

FAA Western-Pacific Region, Airports Division, 15000 Aviation Blvd., Room 3012, Lawndale, CA 90261

The Public Comment Period will be open from Friday, April 4, 2008 through 5:00 PM, Pacific Daylight Time, on Friday, May 9, 2008. Written comments on the Draft EA can be submitted at either the Public Information Workshop or the Public Hearing, or mailed to Pamela Adams, CCDOA Planning, P.O. Box 11005, Las Vegas, NV 89111-1005, or faxed to (702) 798-6591, or e-mailed to pamela@mccarran.com, or delivered to Planning Section, Clark County Department of Aviation, 4th Floor, Main Terminal, McCarran International Airport, 5757 Wayne Newton Blvd., Las Vegas, NV 89119. All comments received will be addressed in the Final Environmental Assessment.

For further information, call Pamela Adams at (702) 261-5709, or Jeffrey Jacquot at (702) 261-5510.

PLB: March 30, April 18 & 27, 2008, Las Vegas Review-Journal

AFFP DISTRICT COURT
Clark County, Nevada

AFFIDAVIT OF PUBLICATION

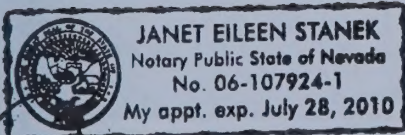
STATE OF NEVADA)
COUNTY OF CLARK) SS:

STACEY M. LEWIS, being 1st duly sworn, deposes and says: That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for,

CC DEPT AVIATION 2615211CC 3833264

was continuously published in said Las Vegas Review-Journal and / or Las Vegas Sun in 1 edition(s) of said newspaper issued from 04/13/2008 to 04/13/2008, on the following days:

04/13/2008



Signed: Stacey M. Lewis

SUBSCRIBED AND SWORN BEFORE ME THIS, THE

21st day of April

2008.

Janet Eileen Stanek
Notary Public



Clark County Department of Aviation

Notice of Availability, Public Comment Period, Public Information Workshop, and Public Hearing for the Draft Environmental Assessment for a Southern Nevada Regional Heliport

Pursuant to Title 49, United States Code, § 47106(c)(1)(A), notice is hereby given that Clark County, Nevada proposes to build and operate the Southern Nevada Regional Heliport (Heliport) south of Sloan, Nevada immediately east of Interstate Highway 15. The Clark County Department of Aviation (CCDOA) is requesting public input on the Draft Environmental Assessment (Draft EA) for the construction and operation of the Heliport and associated utilities. The Draft EA discloses the potential economic, social, and environmental impacts of the proposed development. The proposed build alternative (referred to as the South of Sloan site) is located east of Interstate 15 and Las Vegas Boulevard South, approximately 5.5 miles south of St. Rose Parkway (a portion of Assessor Parcel No. 204-01-000-004). The development of the Heliport as proposed would provide a facility that would satisfy existing and future needs of the Grand Canyon air tour helicopter operators in a manner that is compatible with the urbanized development in Clark County. Such development includes, but is not limited to: site preparation; grading and installation of drainage facilities; and paving, marking and lighting of helicopter parking areas, taxiways and four Final Approach and Takeoff Areas. The proposed Heliport will accommodate approximately 80 based helicopters with expansion capability for additional helicopters. The Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflown by commercial helicopters providing tours of the Grand Canyon which originate at McCarran International Airport.

A Public Information Workshop will be hosted on Thursday, May 1, 2008, from 4:00 PM to 7:00 PM, Pacific Daylight Time, at the Clark County Government Center, Cafeteria, 500 S. Grand Central Parkway, Las Vegas, NV. Members of the public are invited to attend the workshop to obtain additional information and to ask questions regarding the proposed Heliport.

A formal Public Hearing on the Draft EA will be held during the Clark County Board of Commissioners' regularly scheduled meeting on Tuesday, May 6, 2008, at 10:00 AM, at the Clark County Government Center, Commission Chambers, 500 S. Grand Central Parkway, Las Vegas, NV. Oral and written comments will be accepted at the Public Hearing.

Beginning April 4, 2008, the Draft EA will be available for public review at www.nicandoprojects.com/heliport, on during normal business hours at the following locations:

Atlante Library	2400 Deer Springs Wy.	Boulder City Library	701 Adams Blvd.
Clark County Law Library	309 S. Third St.	Clark County Library	1401 E. Flamingo Rd.
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Sunrise Library	5400 Harris Ave.	UNLV Library	4505 S. Maryland Pkwy.
West Charleston Library	6301 W. Charleston Blvd.	West Las Vegas Library	951 W. Lake Mead Blvd.
Whitney Library	175 E. Tropicana Ave.		

McCarran International Airport, Clark County Department of Aviation, Planning Offices, 4th Floor

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BLM - Las Vegas Field Office, 4701 N. Torrey Pines

FAA Western-Pacific Region, Airports Division, 15000 Aviation Blvd., Room 3012, Lawndale, CA 90261

The Public Comment Period will be open from Friday, April 4, 2008 through 5:00 PM, Pacific Daylight Time, on Friday, May 9, 2008. Written comments on the Draft EA can be submitted at either the Public Information Workshop or the Public Hearing, or mailed to Pamela Adams, CCDOA Planning, P.O. Box 11005, Las Vegas, NV 89111-1005, or faxed to (702) 798-6591, or e-mailed to pamelaa@mccarran.com, or delivered to Planning Section, Clark County Department of Aviation, 4th Floor, Main Terminal, McCarran International Airport, 5757 Wayne Newton Blvd., Las Vegas, NV 89119. All comments received will be addressed in the Final Environmental Assessment.

For further information, call Pamela Adams at (702) 261-5709, or Jeffrey Jacquart at (702) 261-5510.

PUB: March 30, April 13, 27, 2008 Las Vegas Review-Journal

AFFP DISTRICT COURT
Clark County, Nevada

AFFIDAVIT OF PUBLICATION

STATE OF NEVADA)
COUNTY OF CLARK) SS:

STACEY M. LEWIS, being 1st duly sworn, deposes and says: That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for,

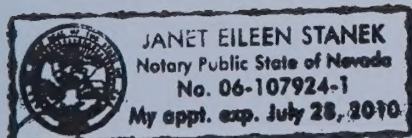
CC DEPT AVIATION

2615211CC

3858857

was continuously published in said Las Vegas Review-Journal and / or Las Vegas Sun in 1 edition(s) of said newspaper issued from 04/27/2008 to 04/27/2008, on the following days:

04/27/2008



Signed: _____

SUBSCRIBED AND SWORN BEFORE ME THIS, THE

28th day of _____

2008.

Notary Public



Clark County Department of Aviation

Notice of Availability, Public Comment Period, Public Information Workshop, and Public Hearing for the Draft Environmental Assessment for a Southern Nevada Regional Heliport

Pursuant to Title 49, United States Code, § 4706(c)(1)(A), notice is hereby given that Clark County, Nevada proposes to build and operate the Southern Nevada Regional Heliport (Heliport) south of Sloan, Nevada immediately east of Interstate Highway 15. The Clark County Department of Aviation (CCDOA) is requesting public input on the Draft Environmental Assessment (Draft EA) for the construction and operation of the Heliport and associated utilities. The Draft EA discloses the potential economic, social, and environmental impacts of the proposed development. The proposed build alternative (referred to as the South of Sloan site) is located east of Interstate 15 and Las Vegas Boulevard South, approximately 5.5 miles south of St. Rose Parkway, a portion ofessor Parcel No. 204-01-000-004). The development of the Heliport as proposed would provide a facility that would satisfy existing and future needs of the Grand Canyon air tour helicopter operators in a manner that is compatible with the urbanized development in Clark County. Such development includes, but is not limited to: site preparation; grading and installation of drainage facilities; and paving, marking and lighting of helicopter parking areas, taxiways and four Final Approach and Takeoff Areas. The proposed Heliport will accommodate approximately 80 based helicopters with expansion capability for additional helicopters. The Heliport, if constructed, should provide some relief to existing residential neighborhoods of the Las Vegas Valley currently overflowed by commercial helicopters providing tours of the Grand Canyon which originate at McCarran International Airport.

A Public Information Workshop will be hosted on Thursday, May 1, 2008, from 1:00 PM to 7:00 PM, Pacific Daylight Time, at the Clark County Government Center, Conference Room 500 S. Grand Central Parkway, Las Vegas, NV. Members of the public are invited to attend the workshop to obtain additional information and to ask questions regarding the proposed Heliport.

A formal Public Hearing on the Draft EA will be held during the Clark County Board of Commissioners' regularly scheduled meeting on Tuesday, May 6, 2008, at 10:00 AM, at the Clark County Government Center, Commission Chambers, 500 S. Grand Central Parkway, Las Vegas, NV. Oral and written comments will be accepted at the Public Hearing.

Beginning April 4, 2008, the Draft EA will be available for public review at www.ricondoprojects.com/heliport, or during normal business hours at the following locations:

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McCarran International Airport, Clark County Department of Aviation, Planning Offices, 4th Floor

Henderson Executive Airport, Clark County Department of Aviation, Customer Service Counter

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PUB: March 30, April 13, 27, 2008 Las Vegas Review-Journal

AFFP DISTRICT COURT
Clark County, Nevada

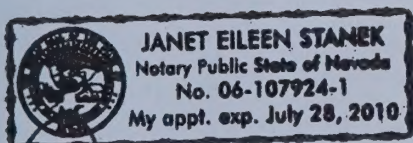
AFFIDAVIT OF PUBLICATION

STATE OF NEVADA)
COUNTY OF CLARK) SS:

Stacey M Lewis, being 1st duly sworn, deposes and says: That she is the Legal Clerk for the Las Vegas Review-Journal and the Las Vegas Sun, daily newspapers regularly issued, published and circulated in the City of Las Vegas, County of Clark, State of Nevada, and that the advertisement, a true copy attached for,
CC DEPT AVIATION 971090 3743573

Was continuously published in said Las Vegas Review-Journal and/or Las Vegas Sun in 3 edition(s) of said newspaper issued from 03/30/2008 to 04/27/2008, on the following days:

03/30/2008
04/13/2008
04/27/2008



Signed: _____

Stacey M. Lewis

SUBSCRIBED AND SWORN BEFORE ME THIS, THE

29th

Day of

April

2008.

Notary Public

Janet Eileen Stanek

LAS VEGAS • McCARRAN •



Clark County Department of Aviation

Notice of Availability, Public Comment Period, Public Information Workshop, and Public Hearing

for the Draft Environmental Assessment for a Southern Nevada Regional Heliport

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McCarran International Airport, Clark County Department of Aviation, Planning Offices, 4th Floor

Henderson Executive Airport, Clark County Department of Aviation, Customer Service Counter

North Las Vegas Airport, Clark County Department of Aviation, Administration Offices

BLM - Las Vegas Field Office, 4701 N. Torrey Pines

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For further information, call Pamela Adams at (702) 261-5709, or Jeffrey Jacquart at (702) 261-55

L.4 Responses to Comments Received on the Draft EA via Correspondence, Comment Form, or Public Hearing

The following provides responses to written and verbal comments received from agencies, members of the public, and other interested parties regarding the Draft EA for a Southern Nevada Regional Heliport. Comments were received during the 36-day public comment period via mail, fax, email, at the Public Information Workshop, and at the Public Hearing. Comments received via correspondence or comment form during the public comment period were organized in chronological order and each piece of correspondence or comment form was assigned an alphabet identifier code for easy reference. **Table L-1** lists the identifier code, name, date of correspondence or comment form, and whether responses are required. Copies of correspondence and comment forms received from the public and regulatory agencies on the Draft EA are provided on subsequent pages. In order to clearly delineate, correspondence and comment forms are printed on blue paper. Correspondence containing comments that require responses are provided in **Section L.4.2**.

Table L-1 (1 of 2)

Correspondence and Comments Received During Public Comment Period

Comment Identifier	Name	Date of Comment	Section
A	Commissioner Chris Giunchigiani	April 8, 2008	L.4.1
B	Bob Loritz	April 13, 2008	L.4.1
C	William J. Liebhauser, Director Resources Management Office U.S. Department of the Interior Bureau of Reclamation	April 16, 2008	L.4.1
D	Edson O. Parker, MD	April 21, 2008	L.4.1
E	Mr. & Mrs. Paul Fogelson	April 28, 2008	L.4.2
F	Margaret Distler	April 28, 2008	L.4.1
G	John Buch ^{1/}	May 1, 2008	L.4.1
H	Greg Rochina ^{1/}	May 1, 2008	L.4.1
I	Dan Mucci	May 2, 2008	L.4.2
J	Pat C. Jensen	May 5, 2008	L.4.2
K	Lewis Wallenmeyer, Director Clark County Department of Air Quality and Environmental Management	May 6, 2008	L.4.2
L	Nevada State Clearinghouse	May 6, 2008	L.4.1
M	Diane Bush	May 6, 2008	L.4.1
N	John Hiatt	May 7, 2008	L.4.2
O	Robert Hornbeck	May 7, 2008	L.4.1
P	William Martin	May 7, 2008	L.4.2
Q	Andy Olson	May 7, 2008	L.4.1
R	Kristi Saylors	May 7, 2008	L.4.1
S	Penelope A. Thompson	May 7, 2008	L.4.1
T	Mary Kay Peck, City Manager City of Henderson, Nevada	May 8, 2008	L.4.2
U	Martin Cunningham	May 8, 2008	L.4.1
V	Katy Karlovich	May 8, 2008	L.4.1

Table L-1 (2 of 2)

Correspondence and Comments Received During Public Comment Period

Comment Identifier	Name	Date of Comment	Section
W	Nova Blazej, Manager Environmental Review Office U.S. EPA, Region IX	May 9, 2008	L.4.2
X	D. Bradford Hardenbrook Supervisory Habitat Biologist Southern Region, Nevada Department of Wildlife	May 9, 2008	L.4.2
Y	Robert Reilley	May 9, 2008	L.4.1
Z	William K. Dickinson, Superintendent National Park Service Lake Mead National Recreation Area	May 9, 2008	L.4.1
AA	Peter Kingman, Vice President Mission Paradise Rural Alliance	May 14, 2008	L.4.1
AB	"NormanD" ^{2/}	May 7, 2008	L.4.1
PH-1	Anthony Hodges ^{3/}	May 6, 2008	L.4.3
PH-2	John Sullivan ^{3/}	May 6, 2008	L.4.3
PH-3	Jerry Kallop ^{3/}	May 6, 2008	L.4.3
PH-4	Favil West ^{3/}	May 6, 2008	L.4.3

Notes:

- 1/ Comment received at the Public Information Workshop on Thursday, May 1, 2008.
 2/ Unable to open and read the emailed comment.
 3/ Comment received at the Public Hearing on Tuesday, May 6, 2008 are provided in Section L.4.3.

Sources: Clark County Department of Aviation and Ricondo & Associates, Inc., May 2008

Prepared by: Ricondo & Associates, Inc. December 2008

L.4.1 Correspondence Containing Comments That Do Not Require Further Clarification or Changes to the Environmental Assessment

Table L-1 lists the identifier code, name, and date of correspondence or comment form either in support of the proposed project or with no comments, as received by the CCDOA from private citizens and other interested parties during the public comment period of the Draft EA. Comments are noted and no further response is needed.

CHRIS GIUNCHIGLIANI
Commissioner



Board of County Commissioners

CLARK COUNTY GOVERNMENT CENTER

500 S GRAND CENTRAL PKY

BOX 551601

LAS VEGAS NV 89155-1601

(702) 455-3500 FAX: (702) 383-8041

April 8, 2008

Ms. Pamela Adams, Principal Planner
Clark County Department of Aviation
PO Box 11005
Las Vegas NV 89111-1005

Dear MS. Adams,

I have reviewed the draft Environmental Assessment for the proposed Southern Nevada Regional Heliport. There are two options noted, one would be to do nothing and the other would construct a heliport south of Sloan, Nevada. When I served in the legislature I wrote and passed AB 490, which called on the county to form an advisory committee to make recommendations for an alternative site for helicopters due to the noise and congestion in our valley. This EA is the result of close to six years of work by the advisory committee.

The Committee recommended the Sloan site as one area to consider for a heliport. The EA shows that the heliport should be constructed with minimal environmental impact, social and economic impact. In fact, the current flight patterns negatively impact an older, less affluent area of town and this proposal would minimize the negative burden that these residents have had to bear. It will provide noise relief to all of our valley residents. It also would assist the tour operators with safer landing and take off opportunities. Finally, the site also allows for expansion to accommodate more helicopters, if needed.

Therefore, I am writing in support of the alternative to move forward with the construction of a heliport south of Sloan, Nevada.

Sincerely,

A handwritten signature in dark ink, appearing to read "Chris Giunchigliani", is written over a light blue horizontal line.

Chris Giunchigliani

cc: Commissioner Rory Reid
Ben Contine
Laura Fitzsimmons
Jeff Jacquart

4655 Garita Street
Las Vegas, NV 89121

April 13, 2008

Ms. Pamela Adams, Principal Planner
Clark County Department of Aviation
PO Box 11005
Las Vegas, NV 89111-1005

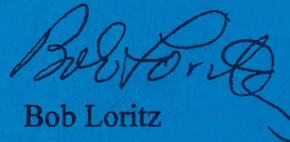
Re: Support of Construction of Heliport South of Sloan, Nevada

Dear Ms. Adams:

I live in the "fly zone" at Tropicana and Sandhill and have had to endure the helicopter noise for far too many years. I was ecstatic when AB 490 passed. At last, the end of the incessant noise from the 40 to 60 helicopters each day was in sight.

I support to move forward with the construction of a heliport south of Sloan, Nevada.

Sincerely,

A handwritten signature in black ink, appearing to read "Bob Loritz", with a stylized flourish at the end.

Bob Loritz

cc: Chris Giunchigliani



United States Department of the Interior

BUREAU OF RECLAMATION

Lower Colorado Regional Office

P.O. Box 61470

Boulder City, NV 89006-1470



IN REPLY REFER TO:

LC-2631

ENV-6.00

APR 16 2008

Mr. Randall H. Walker
Director of Aviation
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, Nevada 89111-1005

Subject: Notice of Availability of the Draft Environmental Assessment (DEA) for the Proposed Southern Nevada Regional Heliport

Dear Mr. Walker:

Thank you for providing the Bureau of Reclamation the opportunity to review and comment on the DEA for the proposed Heliport Project. Neither of the alternatives under consideration will impact Reclamation lands or facilities. We have no comments on the DEA.

Should Reclamation lands or facilities be impacted by this project at a later date, we would appreciate notification. If you have questions or require additional information, contact Ms. Lauren Perry, Acting Manager, Environmental Compliance Group, by telephone at 702-293-8392 or by electronic mail at lperry@lc.usbr.gov.

Sincerely,

William J. Liebhauser, Director
Resources Management Office

1800 Silver Ave.
Las Vegas, NV 89102
eoparker@aol.com

Home: 702-474-4477
Cell: 702-499-9994
Fax: 702-474-9420

April 21, 2008

Ms. Pamela Adams, Principal Planner
Clark County Department of Aviation
PO Box 11005
Las Vegas, NV 89111-1005

Re: Southern Nevada Regional Heliport Near Sloan Needs To Be Built Without Further Delay

Dear Ms. Adams,

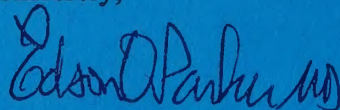
Please accept my strongest endorsement of the South of Sloan Site for construction of the Southern Nevada Regional Heliport. The construction of this heliport, distant from high density residential areas in Clark County, to handle the Grand Canyon air tour helicopters is long, long overdue. The current helicopter flight routes, with the long low-level eastern departure route from McCarran over thousands of residences along Tropicana and the long low-level western arrival route over thousands of residences along Charleston, should never have been authorized in the first place. They most assuredly would not have passed an environmental assessment and closer public scrutiny had they been done prior to their adoption.

As long-time residents living near Charleston and Martin Luther King for 18 years, I and my wife are bombarded daily with the disturbing helicopter noise. But as a helicopter pilot, myself, I don't dislike the helicopters or the industry, they are simply operating in the wrong location and need to be moved to a rural area. Personally, I flew helicopters for two combat tours in Vietnam and, at times, the prolonged and riveting noise from the tour helicopter traffic near my home causes me to relive that vivid experience. I am a happier guy doing without reliving that experience, which is why I located my residence at least 4 miles away from any airport in Clark County. To have the arrival route of those tour helicopters placed almost directly over my house was unexpected, unwanted and remains unacceptable.

I was Chairman of the Advisory Committee on Helicopter Noise for the first two years of its existence. Therefore, I thoroughly understand all the issues involved in the process of giving the tour helicopters a new home and new routes where they belong, a process which has taken far too long to reach fruition, but is hopefully on the home stretch.

My wife and I, along with thousands of other Las Vegas and Clark County residents adversely impacted by the tour helicopter noise, strongly support the creation of the Southern Nevada Regional Heliport near Sloan, as expeditiously as it can be built and put into operation.

Sincerely,



Edson O. Parker, MD

cc: Commissioner Rory Reid

Draft Heliport Environmental Assessment Public Comment Form

PLEASE NOTE: Comments must be received no later than **Friday, May 9, 2008** at 5:00 PM PDT

1. Submit your comments at the Public Information Workshop:
Thursday, May 1, 2008, from 4 PM to 7 PM
Clark County Government Center, Cafeteria
500 S. Grand Central Pkwy, Las Vegas, NV 89101.
2. Submit your comments at the Public Hearing:
Tuesday, May 6, 2008, at 10 AM
Government Center, Commission Chambers.
3. Fax your comments by 5:00 PM, Friday, May 9, 2008, to
(702) 798-6591, Attention: Pamela Adams
4. E-mail your comments by 5:00 PM, Friday, May 9, 2008, to
pamelaa@mccarran.com
5. Mail your comments by 5:00 PM, Friday, May 9, 2008, to:
Pamela Adams, Planning Division
McCarran International Airport
P.O. Box 11005, Las Vegas, NV 89111-1005.
6. Deliver your comments 5:00 PM, Friday, May 9, 2008, to:
Pamela Adams, Planning Division
Clark County Department of Aviation, 4th Floor, Main Terminal
McCarran International Airport
5757 Wayne Newton Blvd., Las Vegas, NV 89119

Name: Mrs Margaret E. Distler

Address: 4750 Wallata Way City: Las Vegas State: Nevada Zip: 89119

Phone: (702) 739-0048 (This is an inlisted #)

Comments:

Comments should focus on conditions, studies, plans, or considerations that may be relevant to determining the environmental impacts of a regional heliport facility reviewed in the draft Environmental Assessment.

I am and have been in favor of moving the helicopter portal to the designated area approximately three miles from Jean Nevada.

We were told a number of years ago by the commissioner's after complaining about the noise and vibrations from the aircraft destroying and vibrating pictures off the wall. shutters vibrate you would think it was an earth quake.

we are unable to relocate as we are seniors and cant relocate we have lived in this house for over 30 years we have lost a lot of good neighbors because of this very irritating noise every day.

Submit Form

If you have any questions, please contact Pamela Adams at (702) 261-5709, or Jeffrey M. Jacquart at (702) 261-5510.

Draft Heliport Environmental Assessment Public Comment Form

PLEASE NOTE: Comments must be received no later than **Friday, May 9, 2008** at 5:00 PM PDT

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Pamela Adams, Planning Division
Clark County Department of Aviation, 4th Floor, Main Terminal
McCarran International Airport
5757 Wayne Newton Blvd., Las Vegas, NV 89119

Name: John Buck
Address: 2250 Darwin Circle City: Hend State: NV Zip: 89014
Phone: ~~702 823 1500~~

Comments:

Comments should focus on conditions, studies, plans, or considerations that may be relevant to determining the environmental impacts of a regional heliport facility reviewed in the draft Environmental Assessment.

Great do it: Great!!!

Start Buddy Today Please

Submit Form

If you have any questions, please contact Pamela Adams at (702) 261-5709, or Jeffrey M. Jacquart at (702) 261-5510.

Draft Heliport Environmental Assessment Public Comment Form

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pamelaa@mccarran.com

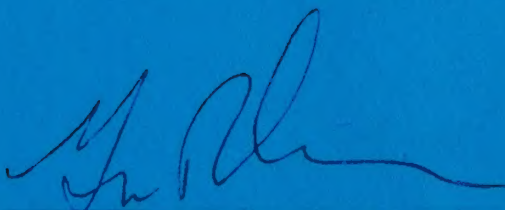
5. Mail your comments by **5:00 PM, Friday, May 9, 2008**, to:
Pamela Adams, Planning Division
McCarran International Airport
P.O. Box 11005, Las Vegas, NV 89111-1005.
6. Deliver your comments **5:00 PM, Friday, May 9, 2008**, to:
Pamela Adams, Planning Division
Clark County Department of Aviation, 4th Floor, Main Terminal
McCarran International Airport
5757 Wayne Newton Blvd., Las Vegas, NV 89119

Name: Greg Rochina
Address: 178 Buena Vista City: Henderson State: NV Zip: 89074
Phone: 702 837 0117

Comments:

Comments should focus on conditions, studies, plans, or considerations that may be relevant to determining the environmental impacts of a regional heliport facility reviewed in the draft Environmental Assessment.

*Great Design.
lets Do it!*



Submit Form

If you have any questions, please contact Pamela Adams at (702) 261-5709, or Jeffrey M. Jacquart at (702) 261-5510.

JIM GIBBONS
Governor

STATE OF NEVADA

ANDREW K. CLINGER
Director



DEPARTMENT OF ADMINISTRATION

209 E. Musser Street, Room 200
Carson City, Nevada 89701-4298

(775) 684-0222

Fax (775) 684-0260

<http://www.budget.state.nv.us/>

May 6, 2008

Pamela Adams
Clark County Department of Aviation Planning
P.O. Box 11005
Las Vegas, NV 89111-1005

Re: SAI NV # **E2008-421**

Reference:

Project: **EA for Southern Nevada Regional Heliport in Sloan**

Dear Pamela Adams:

The following agencies support the above referenced document as written:

State Historic Preservation Office

This constitutes the State Clearinghouse review of this proposal as per Executive Order 12372. If you have questions, please contact me at (775) 684-0209.

Sincerely,

A handwritten signature in black ink, appearing to read "Krista Coulter", written over a horizontal line.

Krista Coulter
for Krista Coulter
Nevada State Clearinghouse

Comment M (Page 1 of 1)

From: "Diane Bush" <BUSHDS@co.clark.nv.us>
To: <pamelaa@mccarran.com>
Date: 5/6/2008 2:19 PM
Subject: Helicopter flight path

I would love to see the heliport in the south built, as I live under the current flight path, when the helicopters make my life hell all summer. I cannot relax in my own backyard, when these machines are buzzing my backyard every 15 minutes or so. After a stressful week at work, I could do without helicopters noise and pollution directly overhead.

When we bought the property we looked at it in the winter, mid week, and did not encounter any helicopters. It was only after we moved in that we discovered we lived directly under their flight path.

help!

**Pamela Adams, Planning Division
McCarran International Airport
P.O. Box 11005
Las Vegas, NV 89111-1005**

May 7, 2008

Subject: Positive Endorsement of Draft Heliport Environmental Assessment

To Whom It May Concern:

I am writing to give my wholehearted endorsement to the Draft Heliport Environmental Assessment plan as currently envisioned for the site south of the Sloan Interchange. I read many parts, and scanned the others of the voluminous Environmental Assessment and thought the report was completely thorough and accurate. I also attended the Clark County Board of Commissioners Public Hearing on the subject on May 6th, 2008.

In my view, this Regional Heliport cannot be built fast enough. It was gratifying to have one of the helicopter companies (Sundance) testify at the hearing that they are welcoming the facility and look forward to operating out of there.

I was also happy to note there were no environmental groups speaking out against the proposed heliport. Many times, these groups oppose projects that clearly make overwhelming sense for the "greater good" of the populace. I am certainly sensitive to environmental concerns and do my part for our "greening" consciousness, but any opposition letters received must be viewed with an eye toward what is really best for the tens of thousands of PEOPLE significantly affected adversely by the current flight path of helicopters on the Grand Canyon route.

Sincerely,

Robert Hornbeck
37 Benevolo Drive
Henderson, NV 89011

(702) 565-8976 (Home)
(619) 392-6642 (Cell)

Comment Q (Page 1 of 1)

From: <aholson@magnamedia.com>
To: <pamelaa@mccarran.com>
Date: 5/7/2008 5:21 PM
Subject: Heliport

Dear Ms. Adams:

I moved into a neighborhood located just South of Harmon Avenue between Maryland and Harmon, and now I work out of my home. The astonishing number of helicopter flights has increased incredibly over the years. I am happy for the tour operators but as they are the only ones making money (not the City from having new tourists, or the airport from collecting a greater share of the revenue) and they seem to not be subject to special regulations such as noise reduction techniques, etc., etc., I am very happy about the plans to relocate them. I don't think the tourists will notice or mind the longer journey to the heliport - after all, they are booking a unique adventure unto itself, not unlike golf or other activities that involve some transit time to enjoy the optional program.

A few years ago I spoke with the airport manager about this issue and he said it would be about 5 years.

Please, add my voice and opinion to those in favor of relocating the heliport facility out of the Tropicana Avenue pathway.

With respect,

Andy Olson

Andrew H. Olson, President

MAGNA MEDIA INTERNATIONAL

P. O. Box 70658

Las Vegas, NV 89170 USA

+1 702-262-6800 Tel

+1 702-262-6801 Fax

aholson@magnamedia.com

May 7, 2008

Kristi Saylor
3129 Desmond Ave.
Las Vegas, NV 89121

Ms. Pamela Adams, Principal Planner
Clark County Department of Aviation
PO Box 11005
Las Vegas, NV 89111-1005

re: Heliport

Dear Ms. Adams,

I write this letter in support of the alternative of constructing a heliport at the south of Sloan site. Building the heliport at the south of Sloan site is essential to improving the quality of life in Clark County for thousands of people who happen to live along the designated routes as they exist now.

I live along the Tropicana route. The helicopters start their operations at 6:30 a.m., seven days a week, and the noise is a major disruption to our neighborhood. The residents along Tropicana, as well those who live in the other less affluent areas of town under the helicopter routes, have been disproportionately burdened by these "flightseeing" helicopters.

The draft Environmental Assessment shows that the heliport at Sloan would have only minimal environmental, social, or economic impacts.

I support the alternative to build the heliport south of Sloan.

Sincerely,

Kristi Saylor

Comment S (Page 1 of 1)

From: <Contemplator7196@aol.com>
To: <pamelaa@mccarran.com>
Date: 5/7/2008 1:31 PM
Subject: proposed helicopter site

I have been a resident of Clark County since 1973 and at my present address of 3879 Almondwood Drive, Las Vegas, 89120, since 1980. Needless to say, I have seen many changes in this time. One of the unpleasant ones is the increase in noise. My street is parallel to Tropicana, the current route of the helicopter tours leaving the airport. Sometimes the helicopters drift over and are actually directly over my house.

On busy days the aircraft are almost nonstop. The vibration shakes the dishes and even the shower doors! It has become unpleasant to sit in the back yard due to this constant noise. I know the new models have a noise suppression feature, but they are still loud.

I favor relocation to the proposed site south of Sloan. Please convey my opinions to the appropriate people.
Thank you for this opportunity to express my thoughts.

Penelope A. Thompson

*****Wondering what's for Dinner Tonight? Get new twists on family favorites at AOL Food.
(<http://food.aol.com/dinner-tonight?NCID=aolfod00030000000001>)

Pamela Adams, Planning Division
McCarran International Airport
P.O. Box 11005
Las Vegas, NV 89111-1005

May 8, 2008

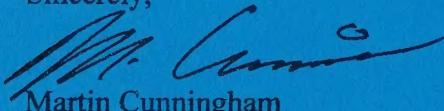
Subject: Positive Endorsement of Draft Heliport Environmental Assessment

To Whom It May Concern:

I am writing to give my endorsement to the Draft Heliport Environmental Assessment plan as currently envisioned for the site south of the Sloan Interchange. I feel the Regional Heliport should be built as soon as possible. It will minimize the noise impact of Henderson residents and fuel consumption/delays of the helicopter operators currently using Mc Carran International. I understand one of the helicopter companies (Sundance) testified at the hearing that they are welcoming the facility and look forward to operating out of there.

Currently there are no environmental groups speaking out against the proposed heliport. I am sensitive to environmental concerns but any opposition letters received must be viewed with what is really best for the thousands residents adversely affected by the current flight path of helicopters on the Grand Canyon route.

Sincerely,

A handwritten signature in black ink, appearing to read "M. Cunningham", with a stylized flourish at the end.

Martin Cunningham
53 Avenza Drive
Henderson, NV 89011

702.242.9346 (Home)
619.788.7714 (Cell)

Comment V (Page 1 of 1)

Draft Heliport Environmental Assessment Public Comment Form

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pamela@mccarran.com
5. Mail your comments by **5:00 PM, Friday, May 9, 2008**, to:
Pamela Adams, Planning Division
McCarran International Airport
P.O. Box 11005, Las Vegas, NV 89111-1005.
6. Deliver your comments **5:00 PM, Friday, May 9, 2008**, to:
Pamela Adams, Planning Division
Clark County Department of Aviation, 4th Floor, Main Terminal
McCarran International Airport
5757 Wayne Newton Blvd., Las Vegas, NV 89119

Name: Steven and Katy KarlovichAddress: 2018 Rockledge Dr City: Las Vegas State: NV Zip: 89119Phone: (702) 808-2920

Comments:

Comments should focus on conditions, studies, plans, or considerations that may be relevant to determining the environmental impacts of a regional heliport facility reviewed in the draft Environmental Assessment.

I am in favor of moving the helicopter portal to the designated area approximately three miles from Jean, NV.

I have lost good neighbors due to the noise the aircraft make because they fly so close to the ground and are a CONSTANT stream throughout the day, particularly on weekends. I feel my growing family should be able to enjoy our backyard and gardening without interference from the helicopters.

Submit Form

If you have any questions, please contact Pamela Adams at (702) 261-5709, or Jeffrey M. Jacquart at (702) 261-5510.

Comment Y (Page 1 of 1)

Draft Heliport Environmental Assessment Public Comment Form

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pamela@mccarran.com
5. Mail your comments by 5:00 PM, Friday, May 9, 2008, to:
Pamela Adams, Planning Division
McCarran International Airport
P.O. Box 11005, Las Vegas, NV 89111-1005.
6. Deliver your comments 5:00 PM, Friday, May 9, 2008, to:
Pamela Adams, Planning Division
Clark County Department of Aviation, 4th Floor, Main Terminal
McCarran International Airport
5757 Wayne Newton Blvd., Las Vegas, NV 89119

Name: Robert Reilly
Address: 4753 Woodridge Rd City: Las Vegas State: NV Zip: 89121
Phone: (702) 436-9619

Comments:

Comments should focus on conditions, studies, plans, or considerations that may be relevant to determining the environmental impacts of a regional heliport facility reviewed in the draft Environmental Assessment.

I strongly support moving the helicopters from McCarran airport to a new facility. As both an employee that works at the airport and a resident that lives directly under the flight path of these helicopters, I think this is a step that should be taken and is long overdue. At the airport, the helicopters are a nuisance to commercial traffic and to many others. For residents on the current flight path, the constant buzzing of relatively low flying helicopters is very annoying and works havoc on sleep. The helicopters are often in the air before 7am. It is nearly impossible to sleep through. Moving these helicopters would solve many problems and would have a negligible effect on their business. I sincerely hope this measure is approved. Robert Reilly

Submit Form

If you have any questions, please contact Pamela Adams at (702) 261-5709, or Jeffrey M. Jacquart at (702) 261-5510.

Audrey Park

From: Pamela Adams [PamelaA@mccarran.com]
Sent: Wednesday, May 14, 2008 8:55 AM
To: Susan Brown
Cc: Dave.Kessler@faa.gov; Audrey Park; John Williams
Subject: Fwd: Proposed Southern Nevada Regional Airport Draft Environmental Assessment

Follow Up Flag: Follow up
Flag Status: Red

Hi,
Here is another heliport comment. I told him we'd accept it.

Sue, would you please add Mr. Kingman to the mailing list and note that he wants 2 copies of the final. thx, -p

pamelaa@mccarran.com
(702) 261-5709

>>> "Peter Kingman" <pkingman@nevadatrust.com> 5/14/2008 9:31 AM >>>
Pamela:

While realizing that the comment period closed several days ago relative to the subject of this email, because our neighborhood group [Mission Paradise Rural Alliance or "MPRA"] did not meet in April but did last evening, I am writing as Vice Chairman of the MPRA to express our interest in viewing and commenting upon the proposed flight paths from the proposed Heliport relocation to the South of Sloan site. The reason for our interest is the fact that there are approximately 350 horses within the boundaries of the MPRA and consequently there is concern about the potential for noise that would affect the livestock in the Rural Protection Area. Would you kindly:

- * Provide to us with the currently proposed flight paths;
- * If possible include our concerns in the comments to be submitted for decision-making purposes; and
- * When completed, send two copies of the Final EA to determine whether consideration was given to the MPRA's unique character.

Thank you for your assistance.

Peter H. Kingman

Nevada Trust Company

4043 South Eastern Avenue

Las Vegas, NV 89119

(702) 853-5801

Fax (702) 696-1720

Comment AB (Page 1 of 4)

From: Susan Brown
To: Service Desk
CC: Adams, Pamela
Date: 5/12/2008 9:35 AM
Subject: Fwd: CCSOA Comment...Help Please
Attachments: CCDOA Comment.txt

I have no idea what programs open these. Can you help us?

Thanks.

Susan Brown
Planning
261-5755 (Office)
798-6591 (Fax)
SusanB@mccarran.com

>>> Pamela Adams 5/12/2008 9:23 AM >>>
Can you figure out how to read this one? thx, -p

pamelaa@mccarran.com
(702) 261-5709

>>> <normand@raffiaweb.com> 5/7/2008 9:35 PM >>>

Comment AB (Page 2 of 4)

From: Alan Eclips
To: Brown, Susan; Service Desk
CC: Adams, Pamela
Date: 5/13/2008 10:50 AM
Subject: Re: Service Request Confirmation Receipt#::SR59698::

Sue I was unsuccessful attempting to open the file under different file extensions. Please advise the sender the problem and if possible have them re-send the email to you.

Alan Eclips
Senior System Technician
Clark County Department of Aviation
McCarran International Airport
Phone: 702-261-4094
Email: alane@mccarran.com

>>> Susan Brown 5/13/2008 10:20 AM >>>
Can you please update me on the status of this as I need it as soon as possible?

Thanks for you help.

Susan Brown
Planning
261-5755 (Office)
798-6591 (Fax)
SusanB@mccarran.com

>>> "servicedesk@mccarran.com" <servicedesk@mccarran.com> 5/12/2008 9:49 AM >>>
We are pleased to inform you that your reported Service Request has been added into the DOA Service Desk and has been assigned to a member of our Support Team.

Reference No.: SR59698
Logged By: SUSANB
Customer ID: PAMELAA
Date/Time: 5/12/08 9:46 AM

Reported Request:
Unable to open CCSOA Comment file.

Should there be any further questions or concerns, please do not hesitate to contact the DOA Service Desk.

DOA Service Desk
Information Systems
McCarran International Airport
Clark County Department of Aviation
Tel: 702-261-HELP (4357)
Fax: 702-261-3755
servicedesk@mccarran.com

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L.4.2 Correspondence Containing Comments Requiring Detailed Responses

Copies of the correspondence containing comments on the Draft EA and the associated responses are provided in the subsequent pages. As for earlier sections, correspondence is printed on blue paper. Responses to the comments are provided on pages immediately following each piece of correspondence and are printed on standard white paper. In addition, individual comments within each piece of correspondence have been bracketed and assigned an individual comment number (e.g., Comment E-1). Responses have been referenced to the individual comment numbers.

The following is a brief background as a primer intended to address some uncertainties noted in various comments by distinguishing the differences between the operations that would occur at a typical general aviation airport and those that would occur at the proposed Heliport. The primer also provides topical responses to a number of general themes that were noted in the comments received. Specific comments are further addressed following each item of correspondence in the subsequent pages. It is noted that there would be no difference in the type of operations that occur at the existing helicopter facilities at McCarran International Airport and those that would occur at the proposed Heliport facility. The construction of the proposed Heliport would not result in a different type of helicopter being operated than currently operates or would be expected to operate from McCarran International Airport.

As discussed in Section 1.2 of the Final EA, the helicopter air tours offer a unique opportunity to experience the Grand Canyon while visiting the Las Vegas region in about one-half day. Helicopter air tour passengers are typically tourists (with limited time in Las Vegas) who are transported a vast majority of the time via limousine or bus from hotels on the Las Vegas Strip to the helicopter base where they are briefed about the tour and loaded onto helicopters for the flight to the Grand Canyon area. The helicopter operators fill as many helicopters as it takes to accommodate the passengers and fly them to the Grand Canyon. After some time afforded for viewing and enjoyment of the Grand Canyon, passengers are flown back to the helicopter base (unlike a general aviation airport where the start and end of a trip are typically not the same locations), and then a vast majority returned via limousine or bus to their point of origin on the Las Vegas Strip. Similar to existing helicopter air tour operations at McCarran International Airport, the helicopter operators transport for-fare passengers only. Operations that would occur at a typical commercial service or general aviation airport, including the transport of air cargo, would not occur at the proposed Heliport. The success of the helicopter air tours of the Grand Canyon relies upon the ability to transport the passengers between the Strip and the helicopter base, conduct the round trip flight, and provide a reasonable amount of time at the Grand Canyon, all within a time span of about one-half day.

It should also be noted that Grand Canyon helicopter air tours will continue to occur and the number of helicopter air tours are forecast to increase at the same rate over time with or without the construction of the proposed Heliport. Helicopter overflights of the Lake Mead National Recreation Area (LMNRA) now occur and will continue to occur regardless of whether the proposed Heliport is constructed. The number of overflights of the LMNRA would be the same for either the Proposed Action or the No Action alternative and only the locations of those overflights would change as a result of the Proposed Action. Information provided in documentation of FAA noise measurements conducted within the LMNRA shows that the new areas that could receive overflights as a result of the Proposed Action are similar in their acoustic characteristics to areas of the LMNRA that currently receive overflights of Grand Canyon helicopter air tours. Additional information is provided in responses to the comments received from the Superintendent of the Lake Mead National Recreation Area (Comment Identifier Z).

Due to helicopter fuel capacity limitations, time demands, and operating costs, Grand Canyon helicopter air tours typically follow the most direct routes with limited *ad hoc* deviations from typical flight routes to other points of interest. It is noted that seeing the Hoover Dam is not the purpose of the Grand Canyon helicopter air tour operations; however, helicopter air tour operations generally follow a path that overflies the Hoover Dam enroute to the Grand Canyon to add viewing of the Hoover Dam as part of the overall experience. Although neither the CCDOA nor the FAA has the authority to mandate flight corridors or the use of those corridors in uncontrolled airspace, the flight corridors depicted in the Final EA reflect corridors defined working closely with the Grand Canyon helicopter air tour operators, are intended to be illustrative of where Grand Canyon helicopters would fly under the Proposed Action and No Action alternatives, and are the best available for analysis purposes. **Attachments L-2 and L-3** are letters received from two of the Grand Canyon helicopter air tour operators that currently operate at McCarran International Airport. Both letters state that the operators support the development of and would relocate their operations to the Heliport. In addition, one operator states that the only corridor they “would consider flying is the McCullough route” and the other states “that it is highly likely” that they will fly the McCullough route instead of the Henderson route. Also, a representative of one of the operators, in testimony at the Public Hearing stated their support for the Heliport and allows direct access to the Grand Canyon over “very remote country” (see comment #PH-2 in Section L.4.3). Both the public hearing testimony and letters indicate the likelihood of operators to follow the McCullough route instead of the Henderson route.

Helicopters and fixed-wing aircraft that operate at airports also have different flight characteristics. A helicopter can takeoff and land on a helipad while fixed-wing aircraft require considerably larger areas for landings and takeoffs (e.g., runways). Once airborne, helicopters do not have a proscribed minimum safety altitude that fixed-wing aircraft¹ pilots must adhere to, although the altitude that helicopters fly now is safe in the event of a powerplant failure such that the helicopter pilot can perform a procedure known as autorotation, allowing the helicopter to land safely. Helicopter pilots, however, must adhere to flight minimum and maximum altitudes, depending on the airspace class (e.g., Class B airspace surrounds McCarran International Airport, which is designated for the busiest airports in the U.S.). It is noted that a practice that is common-place for the operators today, and that is anticipated to continue, is for the helicopter pilot to maintain a minimum altitude of 500 feet above the ground.

In response to overflights of wildlife, Section 4.10.2.3 of the Final EA provides a detailed discussion on the potential ground clearances for flights passing over the desert bighorn sheep, desert tortoise, bird species, and general wildlife within the Sloan Canyon NCA, the LMNRA, and undeveloped lands outside these two areas, including the Boulder City Conservation Easement area in the Eldorado Valley. Exhibit IV-12 in the Final EA depicts the potential flight corridors and flight altitudes along with terrain elevations in the Las Vegas region. As noted, helicopter overflights are not likely to disturb wildlife if a minimum of 1,500 feet vertical distance is maintained. Based on assumptions and the discussion in Section 4.10.2.3 of the Final EA, it is noted that helicopter operations on the existing and potential helicopter flight corridors have the potential to temporarily displace wildlife in specific locations under the Proposed Action and No Action alternative. In locations near the Rendezvous Point, where the terrain would cause ground clearances to be less than 1,000 feet AGL, helicopter flight altitudes under the Proposed Action would be the same as existing helicopter flight altitudes and helicopter flight altitudes under the No Action alternative. Helicopter operations would be voluntarily confined to narrow corridors (including the two-mile wide

¹ 14 Code of Federal Register 91.119

congressionally mandated flight corridor over Sloan Canyon NCA and the North McCullough Wilderness Area) through habitat areas under both alternatives; therefore, the potential areas of disturbance would be limited. Because no hovering activities are likely to occur along existing helicopter flight corridors or along potential helicopter flight corridors, the potential duration of any disturbances to wildlife would be brief. While helicopter overflights have the potential to disturb wildlife in specific locations, helicopter overflights are not expected to have a significant impact on wildlife under the Proposed Action or No Action alternative.

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September 8, 2008

Mr. Jeff Jacquart
Clark County Department of Aviation
Postal Box 11005
Las Vegas, Nevada 89111

Dear Mr. Jacquart:

This letter is in reference to our phone conversation recently concerning the proposed non-urban heliport to be built along Interstate 15 just south of Sloan, Nevada.

Specifically you asked me to address concerns that helicopter tour operators such as Sundance would fly the McCollough route or corridor. This route goes directly from the heliport site across the McCollough Mountains eastbound towards the Grand Canyon. Apparently there is some concern that operators would not fly this route but would fly north to the Las Vegas valley then eastbound over populated areas in Henderson, Nevada instead.

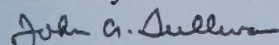
I want to assure you that it is highly likely that my company's helicopters will fly the McCollough route instead of the Henderson route despite having to pay a \$3 fee for the McCollough route.

Once the helicopters clear the McCollough Mountains eastbound our flights will probably turn directly towards Hoover Dam enroute to the Grand Canyon as this is an important part of our tours.

I hope this answers your question about routes.

If you have any more question or need any assistance on the heliport project, please don't hesitate to call me.

Sincerely:


John A. Sullivan
CEO

Maverick[®]

HELICOPTER TOURS

September 1, 2008

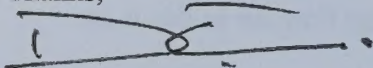
Attn: Jeff Jacquart

Jeff I wanted to follow up with you regarding a recent conversation we had regarding the proposed Urban Heliport. I wanted to make you and your team aware that we are still in support of moving out to the Urban Heliport when it gets complete.

In regards to the flight path, the only route that Maverick would consider flying is the McCullough route. The Jean/Henderson routes do fly by the Hoover Dam which is the only value to these routes that we see. The Jean/Henderson routes just add too much flight time to our tour. By adding more flight time this will only add expense to the tour/customer and not provide any additional sightseeing value. This could potentially make this entire project a failure because there would be no advantage to fly from this location.

If you have any other questions please let me know.

Thanks,



Dale Cowley
Director of Operations
Maverick Helicopters

Comment E (Page 1 of 1)

From: Pamela Adams
To: Brown, Susan
CC: j_williams@ricondo.com; Jacquart, Jeffrey; Park, Audrey
Date: 4/28/2008 8:27 AM
Subject: Fwd: Heliport South of Sloan Comments

Another Heliport comment to file. thx, -p

pamelaa@mccarran.com
(702) 261-5709

>>> "Debnpaul" <debnpaul@lasvegas.net> 4/28/2008 8:23 AM >>>

There are only two locations that would be environmentally safe and prudent to locate a heliport that services Lake Mead and Grand Canyon around Las Vegas. One would be on the far southeastern edge of the city. But that has been deemed too far from the source of customers.

The other, South of Sloan, is then the best location for this helicopter traffic.

It is located adjacent to I-15, so that there is easy access by customers, and it is far enough away from the currently built residences so that safety and noise should not be a negative factor. If they fly at a reasonable height while crossing the preserve, they should not cause any difficulties to the environment there.

The helicopter traffic, however, MUST NOT BE ALLOWED TO TURN NORTH to site see or for any other reason. Otherwise all safety and noise considerations would become violated.

The helicopter traffic also MUST NOT BE ALLOWED TO TAKE SHORT CUTS ACROSS ANY PART OF DEVELOPED HENDERSON OR LAS VEGAS to get to Lake Mead. Otherwise all safety and noise considerations would become violated.

If we must have these helicopters flying to the Lake Mead and to the Grand Canyon, then the site South of Sloan will be the appropriate place (for safety and noise abatement) to locate it.

Mr. & Mrs. Paul Fogelson
2819 Sapphire Desert Dr.
Henderson, NV 89052

No virus found in this outgoing message.

Checked by AVG.

Version: 7.5.519 / Virus Database: 269.23.4/1397 - Release Date: 4/25/2008 7:42 AM

E-1

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Response to Comment in Correspondence E - Mr. & Mrs. Paul Fogelson

Response to Comment E-1

As described in Section 2.5.1.2 of the Final EA, the CCDOA consulted with the Grand Canyon helicopter air tour operators, the FAA, and other stakeholders to identify potential helicopter flight corridors between the South of Sloan site and the Rendezvous Point except for the portion of the McCullough corridor passing through the Sloan Canyon National Conservation Area (NCA), as enacted by Congress. Because neither the CCDOA nor the FAA has the authority to mandate flight corridors or the use of those corridors in uncontrolled airspace, the flight corridors depicted in the Final EA are intended to be illustrative of where Grand Canyon helicopters would fly under the Proposed Action and No Action alternatives and are the best available for analysis purposes. The McCullough corridor was developed based in large part on the corridors for flying above the Sloan Canyon NCA established as part of Public Law 109-115, Section 180. The Proposed Action does not include any proposal to establish or implement mandatory flight corridors.

As stated in the introduction to this section and demonstrated through testimony received at the public hearing and letters received from two of the Grand Canyon helicopter air tour operators (see Attachments L-2 and L-3 and comment #PH-2 in Section L.4.3), the Grand Canyon helicopter operators would most likely follow the McCullough corridor under the Proposed Action, because the corridor provides the most direct route between the South of Sloan site and the Rendezvous Point and overflies the Hoover Dam. Further, helicopters following the Henderson corridor would be required to pass through the Class B airspace serving McCarran International Airport (as shown on Exhibit IV-12) and Class D airspace serving Henderson Executive Airport. Given the choice, helicopter operators would prefer to fly outside of Class B and Class D airspace, thereby avoiding coordination with air traffic controllers at Henderson Executive that could result in delays to helicopter operations to allow fixed-wing aircraft operations to occur. Following the McCullough corridor would allow the helicopters to remain outside of controlled airspace for the entire journey to the Rendezvous Point.

Some Grand Canyon helicopter operators have stated that they may operate an evening return flight along Charleston and Strip Railroad Corridors to provide guests with a view of the Las Vegas Strip as part of their return from the Grand Canyon. The environmental consequences of this potential corridor were analyzed in the Final EA. It was noted in Section 4.1.1 and 4.1.2.3 of the Final EA that no residences, households, or noise-sensitive land uses (including under the Overflight Area) would be exposed to helicopter noise of day-night average sound level (DNL) 65 or higher in 2011 or 2017 under the Proposed Action. Consequently, no significant noise exposure would occur in residential areas under the Proposed Action.

Section 2.5.1.2 of the Final EA states the CCDOA will continue to encourage Grand Canyon helicopter operators to avoid overflying noise-sensitive areas to the extent practicable and further intends to promote Letters of Agreement between Grand Canyon helicopter operators and the FAA as part of operating at the South of Sloan site, similar to those that are currently in place for operations at McCarran International Airport. The purposes of the Letters of Agreement are to ensure safety, minimize noise levels in residential areas, and comply with FAA air traffic control guidelines while operating in controlled airspace. The CCDOA conducts periodic noise monitoring of helicopter activity along the existing corridors and it is anticipated that CCDOA would continue to periodically monitor helicopter noise levels along any portions of helicopter flight corridors that may pass through urban areas.

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>>> "Dan Mucci" <dmucci@mca-mail.com> 5/2/2008 2:03 PM >>>
Pamela,

I am writing this in response to the heliport issue in Sloan. Having just relocated to Nevada, I spent considerable time locating the perfect place to live. I looked at over 60 homes, before I decided to purchase a new home in Anthem Highlands. I did so for many reasons, some of which are the quite desert, the mountain views, and the supposed protected Sloan Canyon property next to me. After dropping a large sum of money on this home, and now adding a pool, I can't wait to see and hear helicopters (100+ per day) hovering past? With all the new construction in this part of the valley, the hundreds of homes that are going up east of I15 and South of St. Rose, how can this even be entertained? More so as a visitor purpose, one for private self serving reasons? I could see if this was a need for the community, but for no real good purpose other than to deface yet another area of the valley.

I-1

Bottom line I realize this is pretty much a done deal and all this about voicing concerns is just doing due diligence and means nothing. This is going to happen regardless of what I say or hundreds of other concerned citizens. This is all about money, and I trust those involved have already sealed this deal.

I-2

However it is a shame that in doing this, where it is proposed, you will be tearing down yet another part of nature, defacing the grounds, lowering overall property values, lowering the standard of living in that area, increasing risk to all who live near it, introducing noise and visual elements that will ruin the very reason most of us moved to that section of town.

I-3

I am sure the limited few who do profit from this will be glad to know that those us of who will not, will forever live with the damage caused by such a blatant disregard for doing what is right, rather than profit by what is so wrong.

Yes I am angry, not only because I just bought a home, spent my savings, but also because this is going to happen regardless of anything I stated above. Shame on the selfish needs of so few at the expense of so many!

Sincerely,

Dan Mucci

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Response to Comments in Correspondence I - Dan Mucci

Response to Comment I-1

See Response to Comment E-1.

Response to Comment I-2

Although the CCDOA has proposed the construction of the proposed Heliport, a number of federal actions are necessary to construct and operate the Heliport. The potential environmental effects of projects involving major federal actions must be appropriately considered in decision-making in accordance with the requirements of the Council of Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act of 1969 (NEPA). As discussed in Section 1.5 of the Final EA, the FAA and the BLM are both responsible for federal actions related to the construction and operation of the proposed Heliport. To ensure compliance with CEQ regulations, the Final EA has been prepared in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*; FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; and the BLM's *National Environmental Policy Act Handbook H-1790-1*. The process has included public and agency scoping, public involvement, agency coordination and consultation, the preparation and distribution of a Draft EA, the preparation of responses to comments received on the Draft EA, and the preparation of the Final EA in accordance with the FAA Orders and the BLM Handbook referenced in the previous sentence. In accordance with the FAA Orders, the Final EA includes an assessment of the potential environmental effects of the Proposed Action (the construction and operation of the proposed Heliport) and the No Action alternative. In addition, alternatives to the Proposed Action have been carefully reviewed to determine whether feasible or prudent alternatives to the proposed Heliport could be identified, as discussed in Chapter II of the Final EA. Prior to the initiation of the EA process, the CCDOA undertook a number of planning efforts to identify the necessary facilities and preferred location for the proposed Heliport. See Appendix B for a timeline of the planning process for the proposed Heliport, which details the planning studies and coordination with stakeholders. Also see Appendix G of the Final EA for a discussion of the scoping process and comments received from the public and agencies. Based upon the analysis and documentation presented in the Final EA, the FAA and the BLM are responsible for issuing findings in accordance with CEQ regulations and favorable findings must be received from both agencies for the CCDOA to obtain the necessary land and construct the proposed Heliport.

Response to Comment I-3

The construction and operation of the Southern Nevada Regional Heliport has been proposed to address concerns related to overflights of populated areas by Grand Canyon helicopter air tours originating and returning to McCarran International Airport and the associated noise from these overflights. One of the specific siting requirements under Nevada Revised Statute, Chapter 495, Sections 300-320 (NRS 495) is to ensure that the proposed heliport facility is not located within one mile of a residential area. NRS 495 defines "residential area" as land that is "being used primarily for one- or two-family dwellings or apartments", and land that is "located adjacent to or near other residentially used land". As discussed in Section 2.5.1.1 of the Final EA, the Proposed Action satisfies this siting requirement as prescribed by the State Legislature. The proposed Heliport site is located about eight miles away from the outer edge of Anthem and on the other side of the mountains of Sloan Canyon NCA, preventing the site from being visible by Anthem residents.

As discussed in Chapter IV of the EA, the potential environmental consequences associated with the Proposed Action and the No Action alternatives for 22 environmental resource categories were evaluated in this Final EA in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, and the BLM's *National Environmental Policy Act Handbook H-1790-1*. Among the resource categories analyzed in this EA include visual resources, noise and compatible land use. As discussed in Sections 3.16, 4.17, and Appendix J of the Final EA, the BLM uses a Visual Resource Management (VRM) system to inventory and manage visual resources on public lands. The VRM system uses four classes to describe different degrees of modification allowed to the landscape. VRM class assignments are based on the area's visual sensitivity and are a result of a combination of factors, including the degree of visitor interest in and public concern for the area's visual resources, the area's public visibility, the level of use by the public, and the type of visitor use the area receives. As noted in Section 4.17 of the Final EA, the Heliport would be visible from Las Vegas Boulevard South and I-5; however no adverse impacts would occur as a result of the Proposed Action. Notwithstanding, the CCDOA would abide by the Clark County Building Code in terms of construction materials and landscaping, consistent with minimizing adverse visual impacts associated with the facility.

Potential noise effects associated with the Heliport site and beneath the potential flight corridors were also assessed in this EA. As detailed in Sections 4.1 and 4.2 of the Final EA, no residences or noise-sensitive land uses would be exposed to helicopter noise of DNL 65 or higher in all analysis years (baseline, 2011, and 2017) under the Proposed Action. Impacts that would result from the construction and operation of the Proposed Action would not exceed significance thresholds of the environmental resource categories, as specified in the aforementioned Orders and Handbook.

Comment J (Page 1 of 1)

From: "Pat C. Jensen" <pcjensen@hdpl.org>
To: "pamelaa@mccarran.com" <pamelaa@mccarran.com>
Date: 5/5/2008 3:15 PM
Subject: Heliport

Pamela Adams,

I am sending this E-Mail to let it be known that I am very upset with one flight corridor for the new Southern Nevada Regional Heliport. The flight path that goes over parts of Green Valley, Green Valley Ranch and Seven Hills (called the "Henderson" flight path in the environmental assessment report) seems to affect a lot of homes, schools, businesses and hospitals with overhead helicopter noise. These helicopters would be flying over the area 7 days a week and probably up to 16 hours a day. The noise would be horrific.

There are two other flight paths located to the south (called "McCullough" and "Jean") that would affect less people. Please eliminate the "Henderson" flight path and keep the helicopters on the "McCullough" and "Jean" paths. Thanks you for your time.

Pat Jensen
pcjensen@hdpl.org<mailto:pcjensen@hdpl.org>
1690 Mountain Song Court
Henderson, NV 89074

J-1

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Response to Comment in Correspondence J - Pat Jensen

Response to Comment J-1

See Response to Comment E-1. As shown on Table IV-1 (see Section 4.1.2.3 of the Final EA), the range of predicted helicopter noise exposure at gridpoint G-3 (see Exhibit IV-5 of the Final EA), located within residential areas beneath the potential Henderson flight corridor is anticipated to range from DNL 36-40 in 2011 and 2017 under the Proposed Action, which is well below the FAA's land use compatibility threshold for residential land use of DNL 65.

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Department of Air Quality & Environmental Management

500 S Grand Central Parkway 1st Fl • Box 555210 • Las Vegas NV 89155-5210
(702) 455-5942 • Fax (702) 383-9994

Lewis Wallenmeyer, Director • Alan Pinkerton, Assistant Director • Tina Gingras, Assistant Director



May 6, 2008

Ms. Pamela Adams, Principal Planner
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, Nevada 89111-1005

Re: Proposed Southern Nevada Regional Heliport Draft Environmental Assessment

Dear Ms. Adams:

The Clark County Department of Air Quality and Environmental Management (DAQEM) has reviewed on the subject draft environmental assessment (EA). The proposed project site is located in Clark County, specifically in Hydrographic Area (HA) 212. HA 212 is contained within the nonattainment areas for carbon monoxide (CO), particulate matter less than 10 microns in diameter (PM₁₀), and ozone (O₃). The following comments and recommendations are provided for your consideration.

Subsection 2.8, Listing of Federal Laws and Regulations Considered

Table II-4 lists the permits and the issuing agency; however, DAQEM does not issue soil and groundwater remediation compliance forms. K-1

Subsection 3.8.1, Air Quality Standards:

Table III-6 depicts the adopted ambient air quality standards of the Nevada Department of Environmental Protection (NDEP), which are similar to the federal standards. However, Clark County's attainment/nonattainment status is based on compliance with the National Ambient Air Quality Standards (NAAQS) prescribed by the U.S. Environmental Protection Agency (EPA). K-2

Subsection 3.8.2, Attainment Status:

Clark County contains 26 hydrographic areas (HAs), not 13 airsheds. For consistency and accuracy, all references to hydrographic basin(s), hydrologic basin(s), airshed(s), hydrobasin(s), etc. should be changed to hydrographic area(s). K-3

Ms. Pamela Adams
May 6, 2008

Subsection 3.8.3, State Implementation Plans:

This section should be corrected to include the following: In 1990, the Las Vegas Valley was designated as the CO moderate nonattainment area. In 1997, HA 212 was redesignated to serious nonattainment for CO. The Clark County Board of County Commissioners (BCC) adopted the CO State Implementation Plan (SIP) in 2000, which was approved by the EPA on September 21, 2004. The CO SIP was revised in 2005 to update the CO emission budget. K-4

In 1993, HA 212 was redesignated as a serious nonattainment area for PM₁₀. In 1995, NDEP submitted a new PM₁₀ SIP to the EPA. On December 5, 2000, the BCC requested that NDEP withdraw all previously submitted SIPs and addendums. A new and completely independent PM₁₀ SIP was submitted in June 2001.

HA 212 was designated as a nonattainment area for the 8-hour O₃ standard on April 15, 2004, but the designation took effect on September 15, 2004. On December 22, 2006, the U.S. Court of Appeals for the District of Columbia Circuit vacated the Ozone Phase I Implementation Rule, which classified portions of Clark County as 'basic'/nonattainment under Subpart I of the Clean Air Act. The court remanded the rule to the EPA for corrective action. To date, EPA has not reissued the rule, leaving Clark County designated nonattainment for O₃ but unclassified. EPA intends to promulgate a new rule to reclassify the Subpart I areas in the fall of 2008 and finalize the rule in the first half of 2009. In addition, EPA issued a more stringent O₃ standard on March 12, 2008. Clark County exceeds the new standard and anticipates a nonattainment designation in 2010.

Subsection 4.4.2.2, Dispersion Analysis/NAAQS Assessment

PM₁₀ dispersion modeling was done for 2017, which represented the highest operational emissions. However, the highest PM₁₀ emissions for the project will occur during the construction phase in 2009. Any modeling demonstration for compliance with NAAQS should be based on the year that has the highest emissions. DAQEM suggests using the emissions in 2009 for PM₁₀ dispersion modeling. K-5

DAQEM appreciates the opportunity to review the draft EA. If you have any questions, please contact me at 702-455-1600.

Sincerely,



Lewis Wallenmeyer
Director

Response to Comments in Correspondence K - Department of Air Quality & Environmental Management

Response to Comment K-1

Table II-4 has been updated for the Final EA to reflect that the Department of Air Quality and Environmental Management is the local agency that reviews/approves the "Application for An Authority to Construct Certificate – Nonmajor Soil and Groundwater Remediation Systems" forms.

Response to Comment K-2

Section 3.8.1 has been clarified for the Final EA to indicate that Clark County's attainment/nonattainment status is based on compliance with the National Ambient Air Quality Standards (NAAQS) prescribed by the U.S. Environmental Protection Agency (U.S. EPA). Table III-6 has been revised for the Final EA to make clear that the ambient standards are the NAAQS and not other standards. The notes to Table III-6 have been revised to make clear that the NAAQS are generally consistent with the ambient air quality standards promulgated by the Nevada Department of Environmental Protection (NDEP) in the Nevada Administrative Code, Section 445B.22097.

Response to Comment K-3

Section 3.8.2 has been revised for the Final EA to reflect that there are 26 hydrographic areas in Clark County. References to "hydrographic basin(s)", "hydrologic basin(s)", "airshed(s)", and "hydrobasin(s)" have been changed to "hydrographic area(s)" or removed.

Response to Comment K-4

The discussion in Section 3.8.3 was revised for the Final EA as suggested by DAQEM.

Response to Comment K-5

The primary sources of guidance for conducting airport air quality assessments in support of National Environmental Policy Act (NEPA) documents are FAA Orders 5050.4B and 1050.1E, the *Airports Desk Reference*, and the *Air Quality Procedures for Civilian Airports and Air Force Bases* (Airport Air Quality Handbook). The scope of air quality analyses conducted for airport environmental assessments varies based on the size of the facility, the nature of the project, the attainment status of the region, and the level of public controversy surrounding the project; however, emission inventories for the Proposed Action and each reasonable alternative, including the No Action alternative, are typically prepared. As part of a NEPA air quality analysis, air quality dispersion modeling and/or roadway intersection hotspot analyses are sometimes conducted for the Proposed Action and reasonable alternatives when there is a reasonable potential for an exceedance of the NAAQS. A formula² presented in the Airport Air Quality Handbook is the guide to determine whether these assessments should be performed. As a general rule of thumb, dispersion modeling is not performed if estimated changes in criteria pollutant emissions resulting from implementation of the Proposed Action are below thresholds listed in the General Conformity Regulations.³

² The formula considers the level of general aviation and air taxi operations at a facility and the number of airport passengers. If the level of activity at an airport is below a certain threshold, a NAAQS assessment is usually not required.

³ U.S. Environmental Protection Agency, 40 Code of Federal Regulations Part 93 Subpart B, *Determining Conformity of Federal Actions to State or Federal Implementation Plans*. November 30, 1993, as amended.

The commenter is correct that project-related particulate (PM₁₀) emissions are anticipated to be highest in 2009 during the construction of the Proposed Action (see Table IV-8 in the Final EA). Dispersion modeling was not performed for 2009, however, because PM₁₀ emissions in 2009 (57.716 tons per year) would be below the established *de minimis* threshold of 70 tons per year. Based on the level of construction-related PM₁₀ emissions in 2009, the relatively small size of this construction project, and recognizing the low ambient concentrations of PM₁₀ recorded at air quality monitors near the South of Sloan site, concentrations of PM₁₀ in 2009 in the vicinity of the heliport are anticipated to be well below the NAAQS for PM₁₀ and dispersion modeling was not required for 2009 to satisfy the requirements of NEPA or General Conformity Regulations. It is also noted that the aggressive dust control measures consistent with DAQEM regulations (see Section 4.20.3 of the Final EA) will be employed during the construction of the heliport to minimize fugitive dust emissions. DAQEM's dust control requirements in DAQEM Regulation 94 are among the most stringent in the United States and result in very high levels of control efficiency. As stated in Section 4.20.3, the measures include the following:

- Application of dust suppressant (water) throughout the construction site to stabilize soil
- Establishment of traffic control in the construction area
- Use of tarps or other suitable enclosures on haul trucks
- Implementation of a site-specific dust reduction plan – required for projects of 10 acres or more

As discussed in Section 4.4.2.2 of the Final EA, although dispersion modeling was not required, such modeling was performed using the FAA's Emission and Dispersion Modeling System (EDMS) to assess the effects of heliport activities on localized concentrations of carbon monoxide (CO) and PM₁₀ in 2017 – the year in which the greatest level of helicopter activity would occur under either the Proposed Action or the No Action alternative. The dispersion modeling analysis was supplemental and, again, was not required to satisfy the requirements of NEPA or General Conformity Regulations. The results of the analysis, presented in Tables IV-6 and IV-7 of the Final EA, demonstrate that concentrations of CO and PM₁₀ associated with Heliport activities when added to background concentrations would be well below the NAAQS for CO and PM₁₀ in 2017.

May 7, 2008

Pamela Adams, Principal Planner
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, Nevada 89111-1005

RE: Sloan Heliport Draft EA

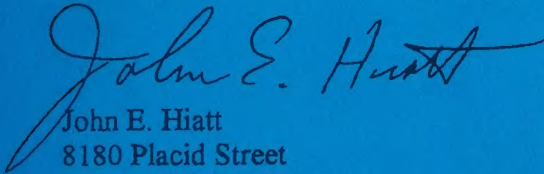
Dear Ms. Adams,

Thank you for the opportunity to comment on the Draft EA for the proposed Sloan heliport.

The one glaring deficiency I see in this draft EA is the lack of a financial feasibility analysis. The EA properly notes that there is no legal provision which obligates helicopter companies to use the new heliport. This fact, coupled with the global economic changes now taking place and the impacts these changes are having and will continue to have on fuel prices may make the proposed site rather unattractive to the helicopter companies. In view of the quite significant costs associated with constructing and maintaining the proposed facility I think it only fair that the public be informed of the potential financial impacts on the Clark County Department of Aviation and ultimately the public users of aviation services.

N-1

Sincerely,


John E. Hiatt
8180 Placid Street
Las Vegas, NV 89123

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Response to Comment in Correspondence N - John Hiatt

Response to Comment N-1

While the potential cost of facilities is an important consideration for any undertaking, the assessment or consideration of such costs generally is not the subject of an environmental assessment as prescribed by federal law, regulation and FAA policy. The purpose of an environmental assessment is to analyze and disclose the potential environmental impacts that would result from a proposed project compared to the no action alternative, to identify the potential significance of those environmental impacts, and to identify any mitigation measures or commitments to reduce those impacts. Neither FAA Orders 5050.4B, FAA Order 1050.1E, nor the BLM NEPA Handbook require fiscal analysis of a proposed project as part of the environmental assessment. A benefit-cost analysis was not considered relevant to the choice among environmentally different alternatives, and therefore was not conducted for purposes of the EA. As for any undertaking involving the expenditure of funds by the CCDOA, the financial impacts are always an important consideration.

The final cost of the Heliport will depend upon the final design of the facilities. However, it should also be noted that the airport system operated by CCDOA is operated as an enterprise fund, and as such relies solely on federal grants issued through the Airport Improvement Program (AIP) that is funded by users of the aviation system, on revenues generated at the various airport facilities through passenger facility charges, parking, tenant leases, landing fees, concessions, etc., and in some cases on the sale of bonds backed by airport revenues. Airport infrastructure projects, with the exception of those that would generate direct revenue (e.g., passenger parking facilities, tenant-occupied and concessions areas within a terminal) are typically funded through a combination of federal AIP grants and airport revenues. When AIP grant funding is used for a project, the airport sponsor (in this case the CCDOA) is required to contribute a local matching share of funds from airport revenues. No local or State taxes have historically been used to fund airport development or operations and maintenance costs.

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Comment P (Page 1 of 1)

From: "William Martin" <jeannbill@webtv.net>
To: <pamelaa@mccarran.com>
Date: 5/7/2008 9:58 AM
Subject: Public Information Workshop

A simple solution to the eastbound tour helicopter flights to the Grand Canyon would be to follow the recommendations in the brochure Helicopter Fly Safely & Quietly . Avoid flying over residential areas by flying the centerline of east Tropicana Ave. The Heliport , IF constructed ,should provide some noise relief to Las Vegas Valley residents . The helicopter tour industry is not obligated to move from McCarran to a new sight as McCarran is federally funded and can remain at the present sight , a move would be at their discretion. I also note the helicoptr tour flights fly north of Calico Ridge Estates a wealthy new develoment . Bill Martin . 6420 E. Tropicana Ave. #23 Las Vegas , Nv. 89122

P-1

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Response to Comment in Correspondence P - William Martin

Response to Comment P-1

See Response to Comment E-1. As stated in Section 2.5.1.2 of the Final EA, the CCDOA will continue to encourage Grand Canyon helicopter operators to avoid overflying noise-sensitive areas to the extent practicable and further intends to promote Letters of Agreement between Grand Canyon helicopter operators and the FAA as part of operating at the South of Sloan site, similar to those that are currently in place for operations at McCarran International Airport. The purposes of the Letters of Agreement are to ensure safety, minimize noise levels in residential areas, and comply with FAA air traffic control guidelines while operating in controlled airspace.

As discussed in Section 1.2 of the Final EA, the State of Nevada, Clark County, and Las Vegas area residents have identified an existing need to reduce, as soon as practicable, helicopter tour overflights and resulting adverse noise impacts over residential areas of Clark County. This need led the State legislature to amend NRS 495 in 2003. While the commenter is correct that the FAA and the CCDOA have limited control over the movement of helicopters (other than FAA control within "controlled airspace" surrounding public use airports), designating a non-urban heliport site would promote the relocation of Grand Canyon helicopter tour operations out of urbanized areas of Clark County. During the Public Hearing held on May 6, 2008, a tour operator voiced their intent to move their Grand Canyon tour operations to the proposed Heliport facility (see comment #PH-2 in Section L.4.3). Other operators have also indicated their support for the Heliport. In addition, the CCDOA would work with the Grand Canyon helicopter air tour operators to provide the most attractive options possible to encourage the operators to relocate their operations to the Heliport and to provide a facility that would best meet the needs of the operators within the financial capabilities of the CCDOA.

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CITY OF HENDERSON
240 Water Street
P. O. Box 95050
Henderson, NV 89009

May 08, 2008

Pamela Adams
Clark County Department of Aviation Planning
P.O. Box 11005
Las Vegas, Nevada 89111-1005

Subject: Draft EA for the Proposed Southern Nevada Regional Heliport

Dear Ms. Adams:

The City of Henderson realizes the benefits that the Clark County Aviation System could receive from the proposed Southern Nevada Regional Heliport at the South of Sloan Site. Any project or policy that reduces the number of residents adversely impacted by helicopter traffic and increases the capacity of McCarran International Airport is attractive, and would be supported by the City, provided that it doesn't unduly burden our residents or conflict with our vision for the city. There are aspects of the Draft EA that we would like to address before any formal action is taken. First, the City has serious concerns with the assumed flight corridor labeled "Henderson," as shown in Exhibit II-3 and various other locations throughout the document. Second, the City feels that the notion of restricted land uses adjacent to the heliport addressed in section E.4 of Appendix E must be clarified in advance of any final action.

T-1

The City of Henderson is in opposition to the use of the northern flight corridor as displayed in Exhibit II-3, labeled and referred to throughout the draft EA as the Henderson Corridor. While DOA staff has identified the McCullough Corridor as the preferred alternative in public presentations, it has also been noted that once the flights are in the air, CCDOA and the other local jurisdictions have no input as to which routes are used. Given the lack of response that the City has received from the Federal Aviation Administration relative to concerns raised over adherence to routes by helicopter flights in the Boulder Highway area, the City feels that this route has the potential to create as many problems as the Regional Heliport proposes to solve. There are currently approximately 85,000 residents of the city of Henderson that live within the boundaries of the Henderson Corridor, with developments such as Inspirada and the soon to be updated West Henderson Plan making it possible that in excess of an additional 40,000 dwelling units would be constructed beneath the corridor. This would result in more impacted residents than the 100,000 that currently live underneath the corridors utilized for Grand Canyon tours, as noted on page I-1 of the document. In addition, the City is concerned that the proximity of this corridor to Henderson Executive Airport (HND) could have negative impacts on the City and its economic vitality. The heavy conflicts with Grand Canyon tours and shared airspace could

T-2

T-3

T-4

Draft EA for Proposed Southern Nevada Regional Heliport
May 8, 2008
Page Two

result in underutilization of HND and conflicts with the vision we have for HND. Finally, the Henderson route appears to encroach upon the Sloan Canyon National Conservation Area (NCA) in an area outside the prescribed corridor through the NCA, and very near the planned Sloan Canyon visitor's center. That fact, coupled with the 32 existing or planned parks which this corridor passes over, would have a negative impact on the recreation opportunities of the residents of Henderson and Clark County as a whole. Due to the potential negative issues with this Henderson Corridor, the City would encourage the use of the two southern routes listed in the document.

T-4

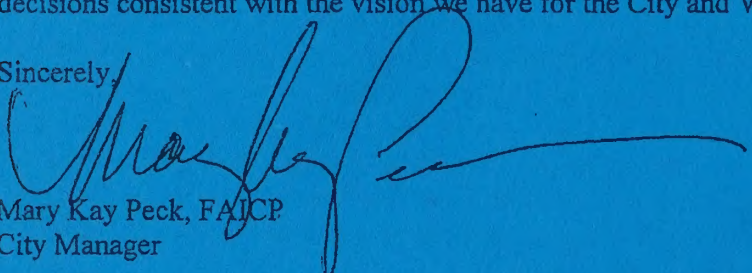
T-5

T-6

The City of Henderson has a long standing history of working with landowners to ensure that all land uses are compliant with federal laws. As such, the City would continue to ensure that any uses near the heliport meet the federally mandated noise attenuation standards if they fall within the adopted noise contours. However, Section E.4 of Appendix E states that "the County would provide assurance to restrict the use of land adjacent to the Heliport site to purposes compatible with helicopter operations." The City will certainly work with the County and welcome their input for any land use decisions made for city of Henderson land near the heliport, and will make decisions consistent with the vision we have for the City and West Henderson specifically.

T-7

Sincerely,



Mary Kay Peck, FAICP
City Manager

MKP:sgv:lg

cc: Mayor James B. Gibson
Councilman Jack K. Clark
Councilman Andy A. Hafen
Councilman Steven D. Kirk
Councilwoman Gerri Schroder

Response to Comments in Correspondence T - City of Henderson, Nevada

Response to Comment T-1

As discussed in Section 4.2 of the Final EA, in accordance with 49 USC 47107(a)(10), the airport sponsor must provide assurance that appropriate actions, including the adoption of zoning laws will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to those compatible with airport operations. A copy of a compatible land use assurance letter from the Clark County Board of County Commissioners is provided in Appendix E of the Final EA. As the airport sponsor, Clark County would provide such an assurance to restrict the development of incompatible land uses over which the County has jurisdiction; however, no such assurances are statutorily required from the City of Henderson. However, the CCDOA would work with the City of Henderson as it has in the past and provide input regarding land use and zoning decisions to reduce the potential for adverse impacts in terms of land use and development within the City of Henderson near the South of Sloan site.

Response to Comment T-2

See Response to Comment E-1. The stated concern related to the “lack of response that the City has received from the Federal Aviation Administration relative to concerns raised over adherence to routes by helicopter flights in the Boulder Highway area” is noted. As discussed in Section 2.5.1.2 and as summarized in Response to Comment E-1, the CCDOA will continue to encourage Grand Canyon helicopter operators to avoid overflying noise-sensitive areas to the extent practicable and intends to promote Letters of Agreement between Grand Canyon helicopter operators and the FAA as part of operating at the South of Sloan site, similar to those that are currently in place for operations at McCarran International Airport. The purposes of the Letters of Agreement are to ensure safety, minimize noise levels in residential areas, and comply with FAA air traffic control guidelines while operating in controlled airspace. The CCDOA conducts periodic noise monitoring of helicopter activity along the existing corridors and it is anticipated that CCDOA would continue to periodically monitor helicopter noise levels along any portions of helicopter flight corridors that may pass through urban areas.

Response to Comment T-3

See Response to E-1. It was noted in Section 4.1.1 and 4.1.2.3 of the Final EA that no residences, households, or noise-sensitive land uses (including under the Overflight Area) would be exposed to helicopter noise of DNL 65 or higher in 2011 or 2017 under the Proposed Action. Consequently, no significant noise exposure would occur in residential areas under the Proposed Action.

Response to Comment T-4

See Response to Comment E-1. As noted in Section 1.2 of the Final EA, the CCDOA regularly updates the System Plan to provide a guiding framework to accommodate existing and forecast future aviation demand. Most recently, the CCDOA completed the *Southern Nevada Regional Airport System Plan* (System Plan) in August 2001. As described in Section 2.3.2 of the EA, consistency with the System Plan was one of the three screening criterion used to determine their ability to reasonably satisfy the purpose and need. As such, any alternative that would not be consistent with the System Plan was eliminated from further consideration in this EA. While any Grand Canyon helicopter tours that may follow the Henderson Corridor would be required to pass through the Class D airspace of Henderson Executive Airport, this would not prevent that facility from serving its role as identified in the System Plan.

Response to Comment T-5

See Response to Comment E-1.

Response to Comment T-6

See Response to Comment E-1 regarding the use of the Henderson corridor and the favorability of the McCullough corridor. It should be noted that, as illustrated on Exhibit IV-1 in the Final EA, following the Jean corridor would result in a flight that is nearly five miles longer than a flight along the McCullough flight corridor and would take the helicopter air tours out of their way to reach the Grand Canyon.

Response to Comment T-7

See Response to Comment T-1. Existing and planned land uses in the vicinity of the proposed Heliport site is described in Section 3.6 of the Final EA. As discussed in Section 3.6 of the Final EA, the City of Henderson annexed about 3,455 acres of land in 2007, which expanded the city boundary southwestward and created the West Henderson Planning Area. The southern boundary of the West Henderson Planning Area is located adjacent to the northern boundary of the Heliport site. Planned land use designations contained in Clark County's *South County Land Use and Development Guide* apply to the portion of the West Henderson Planning Area south of Sloan Road. Land parcels in the immediate surroundings of the Heliport site are anticipated to remain vacant in the future based on adopted land use plans and current land ownership status.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

May 9, 2008

Patricia Adams
Principal Planner
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, Nevada 89111-1005

Subject: US EPA Comments on the Draft Environmental Assessment for the Southern Nevada Regional Heliport, Clark County, Nevada

Dear Ms. Adams:

The U.S. Environmental Protection Agency (EPA) has reviewed the April 2008 Draft Environmental Assessment (Draft EA) for development of the Southern Nevada Regional Heliport (Project). Our comments are provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and Section 309 of the Clean Air Act.

We appreciate the opportunity to provide input during the development of the Draft EA. We note that on December 17, 2004, EPA previously provided extensive formal scoping comments for this Project which included recommendations for assessing air quality concerns for a project of this nature as well as other key resources.

EPA's concerns, as described in the enclosed detailed comments, include several recommendations to ensure the integration of the heliport with transit alternatives to and from Las Vegas. Additionally, our comments discuss concerns pertaining to impacts to wildlife and air quality as well as cumulative impacts. Finally, EPA recommends clearly identifying measures to avoid and minimize operational and construction-related impacts from proposed Project.

We look forward to continued participation in this process as more information becomes available. When the Final EA is released for public review, please send two copies (mailcode: CMD-2) to the address above. If you have any questions, please feel free to contact Connell Dunning, Transportation Team Leader, at 415-947-4161, or Tom Plenys, the

W-1

W-2

W-3

lead reviewer for this project. Tom can be reached at 415-972-3238 or
plenys.thomas@epa.gov.

Sincerely,



Nova Blazej, Manager
Environmental Review Office

CC: David Kessler, Federal Aviation Administration
Lewis Wallenmeyer, Clark County Department of Air Quality and Environmental
Management
Steve Roberts, Army Corps of Engineers
Del Abdalla, Federal Highway Administration

Enclosure:

EPA's Detailed Comments on the Draft EA for the Southern Nevada Regional Heliport

EPA COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE SOUTHERN NEVADA REGIONAL HELIPORT, MAY 9, 2008

Integration With Transit and Transportation

As EPA previously discussed in our December 17, 2004 scoping comments, given that the proposed facility will be in a non-urban setting and a portion of the heliport business will consist of tours offered for Las Vegas visitors, integration of the proposed facilities with existing transit and transportation opportunities should be evaluated. The Final EA should identify all transportation improvements proposed to provide access to the proposed facility from population centers surrounding Las Vegas, including transit connections, new methods to move people while reducing congestion, and increased bus service (express service, increase in service on existing routes, and new routes). Additionally, the Final EA should also discuss and identify potential transportation opportunities including transit options that may be coordinated with the Southern Nevada Supplemental Airport being proposed at the Ivanpah site.

W-4

EPA recommends that the construction of a heliport include effective and easy opportunities for transit between Las Vegas and the heliport. EPA recommends that transit options are available from day one of heliport opening, rather than planning on incorporating transit or other alternatives to reduce vehicle miles traveled for a later phase of heliport operation.

Recommendations:

- The Final EA should discuss proposed methods to minimize vehicular emissions from travel between population centers and the heliport (for example, organized buses for tours leaving from Las Vegas airport and the Las Vegas Strip).
- The Final EA should also discuss transportation alternatives including transit options that could result through coordination with the proposed Ivanpah airport and associated transit alternatives to Las Vegas.

W-5

W-4

Cumulative Impacts

The Draft EA does not include a full discussion of the cumulative impacts on air quality due to the Supplemental Southern Nevada Airport. The Council on Environmental Quality's (CEQ) regulations for implementing National Environmental Policy Act (NEPA) define cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions (40 CFR Part 1508.7). Rather than deferring a discussion of how cumulative air quality impacts will be analyzed to a future, separate document or project, EPA recommends that this is an appropriate venue to highlight how cumulative impacts to air quality will be addressed. The following description of cumulative impacts is included in *Chapter 1 – CEQ Considering Cumulative Effects Under the National Environmental Policy Act (1997)*:

W-6

In light of the current non-attainment status for multiple pollutants in the location of the proposed Project, the increase in air and vehicular traffic due to reasonably foreseeable future projects and the substantial construction activities expected, FAA and Clark County should develop a Construction Emissions Mitigation Plan for fugitive dust and diesel particulate matter (DPM) in the Final EA. Under NEPA, "all relevant, reasonable mitigation measures that could improve the project are to be identified. Mitigation measures must be considered even for impacts that by themselves would not be considered significant" (see Council on Environmental Quality (CEQ), 1981, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations"). EPA recommends the following mitigation measures be evaluated for feasibility and included in the Construction Emissions Mitigation Plan where appropriate in order to reduce impacts associated with emissions of PM₁₀ and other toxics from construction-related activities. A firm commitment to implementing these mitigation measures should be included in the Final EA.

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Reduce use, trips, and unnecessary idling from heavy equipment.
- Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels and to perform at verified standards applicable to retrofit technologies. Employ periodic, unscheduled inspections to limit unnecessary idling and to ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications.
- Prohibit any tampering with engines and require continuing adherence to manufacturers recommendations
- If practicable, lease new equipment meeting the most stringent of applicable Federal or State Standards. In general, only Tier 2 or newer engines should be employed in the construction phase, given the scale of the construction project.
- Utilize EPA-registered particulate traps and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site.

Administrative controls:

- Identify all commitments to reduce construction emissions and update the air quality analysis to reflect additional air quality improvements that would result from adopting specific air quality measures.

W-15



- Identify where implementation of mitigation measures is rejected based on economic infeasibility.
- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. (Suitability of control devices is based on: whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be significant damage caused to the construction equipment engine, or whether there may be a significant risk to nearby workers or the public.)
- Utilize cleanest available fuel engines in construction equipment and identify opportunities for electrification. Use low sulfur fuel (diesel with 15 parts per million or less) in engines where alternative fuels such as natural gas are not possible.
- Develop construction traffic and parking management plan that minimizes traffic interference and maintain traffic flow.
- Identify sensitive receptors in the project area, such as children, elderly, and infirm, and specify the means by which you will minimize impacts to these populations. For example, locate construction equipment and staging zones away from sensitive receptors and fresh air intakes to buildings and air conditioners.

W-15

W-16

Recommendation:

- The Final EA should identify and commit to specific mitigation measures not only for fugitive dust emissions but also for exhaust emissions based on the recommendations above.

W-15

Operational Mitigation Measures

Given the area's nonattainment status, EPA recommends that the Final EA identify specific feasible measures to reduce emissions associated with the project's construction and operation to ensure that the air basin achieves timely attainment of applicable Federal air quality standards. Any programs to voluntarily reduce emissions from helicopters, support vehicles, and infrastructure should be identified in the Final EA.

Recommendation:

- The Final EA should discuss and evaluate the feasibility of incorporating the following measures to minimize emissions:
 - Expand electric and alternative fuel infrastructure facilities for ground support equipment (GSE) and for ground access vehicles.
 - Adopt and encourage incentive programs, including pricing structures, to reduce commute trips for heliport users and employees.
 - Establish specific, quantifiable goals to reduce emissions from GSE and from any auxiliary power units (APU) associated with operation of the facility.
 - Identify specific, quantifiable targets to reduce emissions for any strategy that is adopted by FAA.

W-17

- Identify alternative fuel projects to reduce emissions from on-heliport and off-heliport sources and other methods.

W-17

Greenhouse Gases

Similar to the recommendations we expressed in our April 7, 2008 comment letter on the Air Quality Assessment Protocol for Southern Nevada Supplemental Airport Environmental Impact Statement, EPA recommends that, as practicable, the Final EA should identify the cumulative contributions to greenhouse gas emissions (GHGs) that will result from implementation of the Project. In addition, we recommend that the Final EA discuss the potential impacts of climate change on the Project as well as any mitigation measures that could reduce the Project's impact.

W-18

Recommendations:

- The Final EA should identify if there are specific mitigation measures needed to 1) protect projects from the effects of climate change, 2) reduce the projects' adverse air quality effects, and/or 3) promote pollution prevention or environmental stewardship.
- The Final EA should identify any sustainable building design and operational measures that can be identified as reducing GHGs with an estimate of the GHG emissions reductions that would result if measures were ultimately implemented.

W-19

Impacts to Wildlife

The Final EA should further analyze and discuss the potential impacts to wildlife related to the increase in aircraft traffic due to the proposed Project as well as reasonably foreseeable projects such as the Southern Nevada Supplemental Airport. Specifically, impacts to bighorn sheep in the Sloan Canyon National Conservation Area (NCA) and the McCullough corridor surrounding areas should be clearly documented, with a detailed description of how current corridor alternatives and varying flying altitudes are expected to impact wildlife and how they have been modified to incorporate measures to avoid and minimize wildlife impacts. In light of the recommended minimum distance of 980 feet above desert bighorn sheep habitat suggested on Page IV-47, the Final EA should describe potential impacts to desert bighorn sheep from individual or recurring flights below these levels. Ultimately, the Final EA should include commitments to implement measures to mitigate noise impacts associated with the Project.

W-20

Additionally, it does not appear that the Draft EA discusses which of the three flight path options from the South of Sloan site will be used. The Final EA should fully discuss the three flight paths and compare their impacts to wildlife. It is not clear from the document why the route over the Sloan Canyon NCA would be selected given the potential to disturb bighorn sheep and given there are two alternatives that would avoid the Sloan Canyon NCA. The Final EA should provide additional information in this respect to help inform future decision making.

W-21

Finally, any mitigation measures that result from consultation with the US Fish and Wildlife Service to protect the desert tortoise should be included in the Final EA and, ultimately, a Finding of No Significant Impact.

Recommendations:

- The Final EA should further discuss potential impacts to bighorn sheep at various above ground level altitudes.
- The Final EA should provide additional information comparing the three proposed flight paths from the South of Sloan site and their respective impacts on wildlife.
- Mitigation measures that result from consultation with the US Fish and Wildlife Service to protect the desert tortoise should be included in final environmental documents for this Project.

W-20

W-21

W-22

Human Health Risk Assessment

As previously indicated in our scoping comments, we recommend that the Final EA fully disclose the project's impacts to human health. Given the significant concerns about adverse health effects from mobile source pollutants and the potential for future growth in the Project vicinity as well as proximity to employees during construction and operations, EPA recommends performing an analysis of potential mobile source air toxics (MSATs) impacts to inform decision-making and to inform avoidance, minimization, and mitigation options. The analysis should clearly state where MSAT impacts may be a concern. When considering appropriate and useful levels of analysis, EPA recommends that the lead agency consider the following:

- The likelihood of impact and potential magnitude of the effect, including both the magnitude of emissions and the proximity of the project emissions to potential residential and sensitive receptors, such as schools, hospitals, day care facilities, and nursing homes;
- The severity of existing conditions;
- Whether the project is controversial and whether air toxics concerns have been raised by the public for this project or for other projects in the area in the past;
- Whether there is a precedent for analysis for projects of this type, either under NEPA or other environmental laws; and
- Whether the analysis could be useful for distinguishing between alternatives, informing design changes, and targeting mitigation.

W-23

The March 2007 report entitled "Analyzing, Documenting, and Communicating the Impacts of Mobile Source Air Toxic Emissions in the NEPA Process" conducted for the American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on the Environment and funded by the Transportation Research Board ([http://www.trb.org/NotesDocs/25-25\(18\)_FR.pdf](http://www.trb.org/NotesDocs/25-25(18)_FR.pdf)) is a helpful reference for developing a process to analyze MSAT impacts. For most transportation projects, EPA generally recommends that the following levels of analysis be considered (in order of increasing

complexity): 1) Qualitative discussion; 2) quantifying emissions; 3) toxicity-weighting emissions; 4) dispersion-modeling; and 4) risk assessment. Procedures for toxicity-weighting, which EPA has found to be especially useful for the targeting of mitigation, are described in EPA's Air Toxics Risk Assessment Reference Library (Volume 3, Appendix B, beginning on page B-4, http://epa.gov/ttn/fera/data/risk/vol_3/Appendix_B_April_2006.pdf). EPA would be happy to work with FAA to evaluate the appropriate level of MSAT analysis for this project.

Recommendation:

- The Final EA should include an analysis of potential MSAT impacts to inform decision-making and to inform avoidance, minimization, and mitigation options.

W-23

Response to Comments in Correspondence W - U.S. Environmental Protection Agency

Response to Comment W-1

The scoping comments from the U.S. Environmental Protection Agency (EPA) were appreciated and were thoughtfully considered during preparation of the Draft EA.

Response to Comment W-2

See the following Response to Comments regarding the environmental impact categories that the EPA called attention to:

- See Response to Comment W-4 and W-5 regarding transit alternatives between the proposed Heliport site and the Las Vegas region
- See Response to Comment W-20, W-21, and W-22 regarding environmental effects to wildlife
- See Response to Comment W-7, W-12, W-13, W-17, and W-19 regarding air quality
- See Response to Comment W-6, W-8, and W-9 regarding cumulative impacts
- See Response to Comment W-15, W-17, and W-19 regarding measures to avoid and minimize operational and potential construction-related impacts that may arise from the Proposed Action.

Response to Comment W-3

Comment noted.

Response to Comment W-4

EPA suggests the integration of this proposed Heliport and the proposed Southern Nevada Supplemental Airport (SNSA) project with existing and potential transportation projects, including transit. However, transportation planning and the implementation of such plans are beyond the scope of this EA, and is part of a much larger and longer term planning program overseen by the Nevada Department of Transportation (NDOT). In fact, NDOT recently issued a Draft Statewide Long-Range Transportation Plan 2008 – 2028 that addresses the certain issues raised by EPA. See the following weblink: <http://www.nevadadot.com/planning/statewidetransportationplan>.

Based on our review of existing plans, there are no planned/funded transit projects (e.g., bus service, light rail) that would link the proposed Heliport site to the city of Las Vegas, the closest urban area. The proposed Heliport site is 15 miles south of Las Vegas Strip, and as discussed in Response to Comment W-5, transportation to and from the Heliport is expected to be by multiple passenger vehicles transporting customers from their hotels.

Neither of the two proposed High Speed Ground Transportation (HSGT) projects (DesertXpress, and the California-Nevada Interstate Maglev) have planned stops at the proposed Heliport site.

It is important to note that Amtrak's Desert Wind was discontinued in May 1997 due to a lack of demand and to free up equipment for other routes. In the Early 2000s, Amtrak proposed reopening a portion of the Desert Wind between Los Angeles and Las Vegas using the faster Tren Articulado Ligero Goicoechea Oriol (Talgo) trains. Amtrak dropped the proposal due to high costs associated with the Talgo trains, required upgrades to the existing Union Pacific roadbed, and a general lack of

interest from the public. (See page 2-4 of the *Draft Alternatives Working Paper for the Southern Nevada Supplemental Airport*, August 2008).

The Regional Transportation Commission of Southern Nevada's Transportation Improvement Plan for Fiscal Years 2007-2010, Future Vision: Transit System Map" identifies a transit project along Las Vegas Blvd to the Sloan Interchange (Ace South Corridor). The Sloan Interchange is about 3.5 miles north of the South of Sloan site. Because of the ready access to the South of Sloan site from Las Vegas Boulevard South, there is no need for additional surface transportation infrastructure to support the Heliport. However, if the need for a transit stop at the heliport arises, Clark County will take the necessary actions to provide reasonable accommodations for a transit facility or stop at the heliport.

Further, no transit alternatives have been developed as part of the proposed Southern Nevada Supplemental Airport that would support a feasible connection to the Heliport. Given the nature of the Heliport user, any transit system between the proposed new airport and the Heliport would generate very low ridership, if any. Further, there is little to no anticipated travel between the proposed Heliport and the proposed new SNSA.

While transit is not part of the SNSA proposal, Clark County is planning to accommodate the construction and operation of transit by others at the new airport.

Response to Comment W-5

As discussed in the Section 4.18.2.1 of the Final EA, the Grand Canyon helicopter operators would continue their current practice of transporting the vast majority of passengers to and from the proposed Heliport site in high-occupancy vehicles (e.g., buses, shuttle vans, limousines). The business model of these operators is based on group transportation from the resorts in Las Vegas rather than attracting individual, independent trips. Accordingly, the Final EA reflects the transport of passengers to the proposed Heliport by multiple-passenger buses or vans to and from their customer's hotels. This does not preclude or prevent a customer from using a private vehicle. Given helicopter tours are commonly conducted by groups, use of private vehicles is not expected to be the common method of travel to and from the heliport by customers.

However, Section 4.4 and Appendix F were revised for the Final EA to reflect that some motor vehicle trips between the proposed Heliport site and the Las Vegas Strip may be in private motor vehicles. Specific changes were made to the emission inventories and dispersion modeling files associated with the Proposed Action. While the Final EA includes revised tables and text reflecting this change, the conclusions reached in the Final EA regarding potential impacts to air quality remain unchanged.

Road access to the proposed Heliport would be from Las Vegas Boulevard South. If another agency or private entity wishes to establish a transit line from the Heliport to Las Vegas, Clark County will take the necessary actions to provide reasonable accommodations for a transit facility or stop at the heliport. See Response to Comment W-4.

Response to Comment W-6

The Final EA includes a comprehensive assessment of the potential for cumulative effects in Section 4.22. The scope of the assessment of cumulative effects, which varies by resource category, includes consideration of past, present, and reasonably foreseeable future actions undertaken by the

CCDOA, individuals, and other agencies. No significant cumulative air quality impacts associated with the Heliport and other reasonably foreseeable actions are likely to occur. As discussed in Appendix F of the Final EA, recurring operational emissions associated with the Heliport would be below *de minimis* levels.

The commenter is correct in stating that the Draft and Final EA do not include the cumulative air quality analysis of the proposed Southern Nevada Supplemental Airport. While FAA and the BLM have prepared a Draft Air Quality Protocol, the air quality analysis for the proposed airport cannot begin until after FAA's Air Traffic Organization has completed its airspace design for the new airport. FAA does not expect to complete this airspace design until August of 2009. The publishing of the Draft Environmental Impact Statement for the proposed Southern Nevada Supplemental Airport is not anticipated until 2011. Consequently, including air quality analysis of impacts related to the proposed airport in the Final EA for the proposed Heliport is premature.

Response to Comment W-7

Section 3.6.2 and Appendix E of the Final EA disclose anticipated land development patterns and plans in the vicinity of the proposed Heliport, which will occur regardless of whether the proposed Heliport is constructed. The Heliport would have a relatively small footprint and would not be expected to cause any induced development in the vicinity. All services associated with the Heliport would be accommodated on the Heliport site and neither the number of employees nor visitors would cause any changes to local or regional development patterns. Development patterns are largely determined by regional demand, BLM disposal boundaries and local land use plans, none of which would be affected by the proposed project. As a result, there are no landscape-level regional impacts that would be caused or affected by this project and no large-scale mitigation measures are applicable.

The type of aircraft operation at the proposed Heliport is not the same as a general aviation or commercial airport, where passengers are transported to and from different cities. The type of aircraft flight operation starts and ends at the heliport for a tour of the Grand Canyon. The nature of the operation of the Heliport is described in Section 1.2 of the Final EA and in the introduction to the responses to comments presented in this Appendix L at the beginning of Section L.4.2.

As shown on Exhibit I-2 and Exhibit II-2 of the Final EA, the proposed Heliport site and land adjacent to the project area is public land federally managed by the BLM; this area is outside the boundary of the BLM disposal area and therefore would preclude the introduction of new populations to the areas near the proposed Heliport and the proposed airport.

Response to Comment W-8

Parties responsible for avoiding, minimizing, and mitigating potential cumulative effects were identified in Section 4.22 of the Final EA.

Response to Comment W-9

The cumulative effects assessment was developed in accordance with FAA Order 5050.4B and CEQ regulations and guidance. CEQ publications that were reviewed during the preparation of the cumulative effects assessment included *CEQ Guidance: Consideration of Past Effects in Cumulative Effects Analysis* (June 2005) and *Considering Effects Under the National Environmental Policy Act* (January 1997). The CCDOA respectfully disagrees with the commenter regarding the applicability of the Caltrans guidance to the EA for the Southern Nevada Regional Heliport. The Caltrans

guidance is applicable to the analysis of surface transportation projects in California prepared under the California Environmental Quality Act (CEQA). It is not applicable or useful to the FAA in its assessment of aviation projects under NEPA.

Response to Comment W-10

Comment noted.

Response to Comment W-11

See Response to Comment W-5.

Response to Comment W-12

See Response to Comment W-4. The operational sources of emissions and construction-related sources of emissions listed in this comment were evaluated in Section 4.4 of the Final EA, and included helicopters, ground service equipment (fuel trucks and ground power units), construction equipment and ground access trips. Specific data regarding these emission sources is provided in Appendix F of the Final EA. Conducting a quantitative analysis of emission reduction benefits associated with other mass transit options is not necessary or warranted. As discussed in Response to Comment W-5, Section 4.4 and Appendix F in the Final EA have been revised to reflect that some motor vehicle trips between the proposed Heliport site and the Las Vegas Strip may be in private motor vehicles. Significance conclusions presented in Section 4.4.1 of the Draft EA remain unchanged – emissions and concentrations of criteria pollutants would be less than significant under the Proposed Action. Air Cargo was not included in the analysis, because the mission of the heliport is to provide a location for Grand Canyon air tours as described in Section 1.2 of the Final EA and as discussed in this Appendix L in the introduction to Section L.4.2. The proposed Heliport facility would not be a break-of-bulk distribution point. The use of auxiliary power units (APUs) for fixed wing aircraft is not the same as for helicopters. Unlike commercial service airports, where airliners are enplaning and deplaning passengers, helicopter tours are conducted on an on-demand basis. Consequently, APU's are not used for helicopter tour operations.

Response to Comment W-13

None of the elements of the Proposed Action require funding or approval by the Federal Highway Administration or Federal Transit Administration. The Proposed Action would not involve modifications to I-15 or regional roadways, because the heliport access road would connect to Las Vegas Boulevard South, not I-15. Transportation Conformity is not applicable to the Proposed Action; however the General Conformity Regulations do apply, because the proposed federal action is located in a nonattainment area. The results of the general conformity applicability analysis are presented in Section 4.4.2.3 of the Final EA. As described in Section 4.4.2.3 of the Final EA, a general conformity determination is not required for the Proposed Action, because project-related emissions are anticipated to be below applicable *de minimis* thresholds and are not regionally significant.

Response to Comment W-14

See Response to Comment W-13. The proposed Heliport site is not and does not need to be included in a conforming Regional Transportation Plan as a surface transportation project subject to the transportation conformity regulations.

Response to Comment W-15

Construction best management practices that would be implemented to minimize the potential for construction-related effects on the environment are described in Section 4.20.3 of the Final EA. The Best Management Practices described in Section 4.20.3 include several strategies to reduce fugitive dust emissions. The CCDOA and its construction contractors would comply with all construction and dust permit conditions and will prepare a dust mitigation plan in conformance Section 94 of the Clark County Air Quality Regulations. (See Table II-4 in Section 2.7 of the EA for a list of permits required for implementation of the Proposed Action.) As required by the Clark County Department of Air Quality and Environmental Management (DAQEM) Regulation 94, CCDOA will submit a Dust Control Permit to Clark County DAEQM that includes a Dust Mitigation Plan. The Mitigation Plan will be an enforceable permit condition of the Dust Control Permit and will contain a description of fugitive dust control, soil stabilization measures, and employee dust control training and compliance. DAQEM's Regulation 94 already requires all feasible dust mitigation measures, achieves very high levels of control efficiency and is one of the most stringent dust control regulations in the country. Section 45 of the Clark County Air Quality Regulations imposes idling time limits on diesel-powered motor vehicles. The CCDOA and its contractors would comply with Section 45 of the Clark County Air Quality Regulations to limit diesel particulate emissions during construction of the proposed Heliport.

The CCDOA and construction contractors would also comply with federal and State of Nevada vehicle emission standards and Clark County emission reduction control strategies as documented in existing State Implementation Plans and the Clark County Air Quality Regulations. The CCDOA would work with the selected construction contractors to identify other feasible and cost effective methods to reduce exhaust emissions during construction activities.

Response to Comment W-16

The construction associated with the proposed Heliport would not pose any health effects associated with construction emissions that would justify extended discussion or analysis. Analysis of Health Effects is not required by FAA Orders 1050.1E and 5050.4B or the BLM NEPA Handbook. The total VOC and PM emissions associated with the proposed project are identified in Section 4.4.2 and Appendix F of the Final EA. These emissions would be below *de minimis* thresholds and would be much lower than emissions from other large projects that have been assessed for construction-related health effects. They would also be likely to take place during a short duration. In addition, the setting and physical context for the proposed project are important. As discussed in Section 3.6 of the Final EA, there are no residential uses or other sensitive receptors where children, elderly, or the infirm would likely be present within three miles of the South of Sloan site. The level and duration of emissions and distance to any sensitive uses demonstrate that this project does not have the potential to cause health impacts associated with construction emissions.

Response to Comment W-17

As discussed in Section 4.4.2 of the Final EA, the total operational emissions from the proposed Heliport would be below *de minimis* thresholds and would not be regionally significant. The emissions from ground service equipment (GSE) would be even lower, with VOC emissions of a third of a ton per year and NO_x emissions of slightly more than four tons per year based on very conservative assumptions about GSE use. Specific data regarding these emission sources is provided in Appendix F of the Final EA.

Nonetheless, the CCDOA and helicopter operators have taken steps to reduce operational emissions. The CCDOA intends to construct a hydrant fueling system at the proposed Heliport facility, which would reduce the use of gasoline and diesel-fueled ground support equipment on the Heliport site. The air quality analysis conducted for the Final EA was based on the conservative assumption that helicopters at the proposed Heliport would be fueled by diesel trucks, consistent with how helicopters are fueled at existing helicopter facilities at McCarran International Airport. The replacement of existing fuel truck servicing with the hydrant system would reduce emissions from current conditions. The hydrant fueling would also allow the helicopter operators to shorten idling times between operations, reducing the need to ground power units (GPU) and idling. The operators already have a compelling incentive to reduce idling and GPU units to reduce fuel and labor costs and maximize the return on the investment in helicopters.

The CCDOA would also work with the helicopter operators to study the feasibility of implementing a ride share program for Heliport employees to reduce travel to and from the Heliport in single occupancy vehicles.

CCDOA would comply with federal and State of Nevada vehicle emission standards and Clark County emission reduction control strategies as documented in existing State Implementation Plans and the Clark County Air Quality Regulations. The Carbon Monoxide State Implementation Plan describes various methods to reduce and control on-road mobile sources of emissions, which produced approximately 86 percent of CO emissions in the Las Vegas Valley in 1996. A control measure that is applicable to the Proposed Action is the use of clean burning gasoline. The cleaner burning gasoline program is implemented by the Clark County DAQEM during the winter months. The fuel, which is low in sulfur and aromatics content, reduces CO and other air emissions by increasing the effectiveness of catalytic converters

Response to Comment W-18

The Final EA includes information regarding greenhouse gas emissions in Section 3.8.6 and Section 4.4.2.4. Projected operations activity at the proposed Heliport represents less than 0.01 percent of U.S. aviation activity. Therefore, assuming that greenhouse gases occur in proportion to the level of activity, greenhouse gas emissions associated with existing and future aviation activity at the proposed Heliport would be expected to represent less than 0.01 percent of U.S. based aviation related greenhouse gases. Further, the project would not increase the number of helicopter operations in the Las Vegas area; only relocate them to a more compatible location. Therefore, greenhouse gases associated with the Proposed Action would not be expected to be significant.

There are no anticipated impacts that possible climate change may have on the proposed Heliport. Increased temperatures would not affect demand, operations, or required infrastructure for the project.

Response to Comment W-19

As discussed in Section 4.4.2 of the Final EA, the total operational emissions from the proposed Heliport would be below *de minimis* thresholds and would be an exceptionally small part of regional emissions inventories. The emissions from GSE would be even lower, with VOC emissions of a third of a ton per year and NO_x emissions of slightly more than four tons per year based on very conservative assumptions about GSE use. Specific data regarding these emission sources is provided in Appendix F.

Nonetheless, the CCDOA and helicopter operators have taken steps to reduce operational emissions. The CCDOA intends to construct a hydrant fueling system at the proposed Heliport facility, which would reduce the use of gasoline and diesel-fueled ground support equipment on the Heliport site. The air quality analysis conducted for the Final EA conservatively assumed that helicopters at the proposed Heliport would be fueled by diesel trucks, consistent with how helicopters are fueled at existing helicopter facilities at McCarran International Airport. The replacement of existing fuel truck servicing with the hydrant system would reduce emissions from current conditions. The hydrant fueling would also allow the helicopter operators to shorten idling times between operations, reducing the need to use ground power units (GPU) and for idling. The operators already have a compelling incentive to reduce idling and GPU units to reduce fuel and labor costs and maximize the return on their expensive helicopters.

The CCDOA would also work with the helicopter operators to study the feasibility of implementing a ride share program for Heliport employees to reduce travel to and from the Heliport in single occupancy vehicles.

CCDOA would comply with federal and State of Nevada vehicle emission standards and Clark County emission reduction control strategies as documented in existing State Implementation Plans and the Clark County Air Quality Regulations. The Carbon Monoxide State Implementation Plan describes various methods to reduce and control on-road mobile sources of emissions, which produced approximately 86 percent of CO emissions in the Las Vegas Valley in 1996. A control measure that is applicable to the Proposed Action is the use of clean burning gasoline. The cleaner burning gasoline program is implemented by the Clark County DAQEM during the winter months. The fuel, which is low in sulfur and aromatics content, reduces CO and other air emissions by increasing the effectiveness of catalytic converters.

As discussed in Section 4.4.2.4 of the Final EA, emissions of greenhouse gases are anticipated to be much less than significant. Nonetheless, pursuant to the County's Sustainability Resolution of December 5, 2007, the County as a whole has set goals relating to sustainability and greenhouse gases that include:

- Reduction of grid-based energy purchases for County-owned facilities by 20 percent by 2015.
- Promoting the design and construction of sustainable and energy efficient buildings and facilities that include water efficient landscaping, natural lighting, energy efficient lighting fixtures and motion detectors, and energy efficient glass with the goal of designing all new buildings over 20,000 square feet to meet LEED certification standards of "Silver" or higher.
- Examining means to achieve a County-wide reduction of GHG emissions by 80 percent from current levels by 2050.
- Evaluating the use of County sites for solar and other renewable energy sources.

The County's Sustainability Resolution will be applicable to the design and operation of the Heliport. Given the relatively low base of GHG emissions and the early planning stages, it is premature to estimate the GHG emission reductions that may occur.

Response to Comment W-20

As discussed in Section 4.22 of the Final EA, the final flight corridors to and from the proposed Southern Nevada Supplemental Airport have not been established, although a preliminary review indicated that flight corridors would typically not overlap directly with the potential helicopter flight corridors, with the possible exception of the Jean corridor. This lack of overlap is largely due to the need to separate aircraft operations at the proposed airport from operations at McCarran International Airport and other airports in the region. Although information is not available to assess the potential cumulative noise effects from helicopter operations at the Heliport combined with operations at the proposed supplemental airport as part of this EA, the EIS will include an assessment of cumulative impacts.

With regard to potential impacts to the bighorn sheep, the legislation for the transfer of the South of Sloan site makes specific requirements of the for-profit helicopter air tour flights that leave from or return to a heliport on this parcel and are flown through the Sloan Canyon NCA. As discussed in Section 4.10.2.3 of the Final EA, one requirement is that the helicopters be flown along a defined two-mile-wide corridor through the Sloan Canyon NCA; this defined corridor avoids the highest ridges in the Sloan Canyon NCA and big game guzzler (i.e., water catchment) locations. Another requirement is that the helicopters be flown at a minimum altitude of between 500 feet and 1,000 feet above ground level for operations on the western border and eastern border of the Sloan Canyon NCA, respectively. Flights occurring outside of the Sloan Canyon NCA do not have to meet these requirements. A practice that is common-place for the operators today, and that is anticipated to continue, is for the helicopter pilot to maintain a minimum altitude of 500 feet above the ground.

As discussed in Section 3.3.3 of the Final EA, it is expected that up to 160 daily helicopter operations to and from the Grand Canyon may occur through the Sloan Canyon NCA in 2011. This number is anticipated to increase up to 200 daily helicopter operations in 2017. However, because helicopter operations would be voluntarily confined to narrow flight corridors through potential bighorn sheep habitat in the Sloan Canyon NCA, the potential areas of disturbance would be limited and the duration of potential disturbance would be brief. Further, as noted in Section 4.10.3 of the Final EA, due to helicopter fuel capacity limitations, time demands, and operating costs, Grand Canyon helicopter air tours typically follow direct routes with limited *ad hoc* deviations to other points of interest (e.g., hovering or circling activities are not likely to occur). Based on these factors and the Sloan Canyon NCA helicopter flight restrictions, overflights of helicopters through the Sloan Canyon NCA are not expected to have significant impacts on bighorn sheep. Therefore, it is not anticipated that the Proposed Action would substantially impact the desert bighorn sheep.

Response to Comment W-21

See text in this Appendix L in the introduction to Section L.4.2. Also see Sections 4.10.2.3 and 4.11.2.3 of the Final EA for information related to potential ground clearances for flights along each of the potential corridors that would pass over the desert bighorn sheep, desert tortoise, bird species, and general wildlife within the Sloan Canyon NCA, the Lake Mead National Recreation Area, and undeveloped lands outside these two areas, including the Boulder City Conservation Easement area in the Eldorado Valley. Exhibit IV-12 in the Final EA also provides corridor locations and potential flight altitudes and terrain elevations in the Las Vegas region. Also see Response to Comment E-1 for a discussion of the identification of the potential flight corridors.

Response to Comment W-22

The Biological Opinion, as issued by the USFWS on July 1, 2008, is reproduced in Appendix I and summarized in Section 4.11.3 of the Final EA. In addition to the proposed minimization measures detailed in the Biological Opinion, the USFWS provided a list of “reasonable and prudent measures [that] are necessary and appropriate to minimize take of desert tortoise”, including implementation of measures to:

- Minimize injury or mortality of desert tortoises due to construction activity (e.g., presence of a qualified desert tortoise biologist prior to and during construction; and installation, monitoring, and maintenance of tortoise-proof fences);
- Minimize predation on desert tortoises by predators drawn to the project area (e.g., implementation of litter control program during construction activities);
- Minimize destruction or degradation of desert tortoise habitat such as erosion, contamination, introduction of noxious, non-native weeds, soil disturbance, habitat fragmentation, due to project activities (e.g., prohibit off-road travel outside construction zones, all construction activities shall occur inside fenced areas, weed monitoring, control of soil erosion and storm water runoff within the project area, and payment of renumeration fees to the Clark County Desert Conservation Program);
- Comply with requirements listed in the Biological Opinion (e.g., authorized desert tortoise biologist will be responsible for overseeing compliance with protective stipulations, submit a closeout report to the USFWS no later than 3 months after completion of the project, and notify the USFWS of any injury or death due to project implementation).

(Also see Biological Opinion in Appendix I of the Final EA for other measures provided by the USFWS that are non-desert tortoise related.)

Response to Comment W-23

At the U.S. EPA's recommendation, CCDOA has added Section 4.4.2.5 of the Final EA to include information about Hazardous Air Pollutants (HAPs). HAPs are compounds for which there are no NAAQS but are still considered by the U.S. EPA as air pollutants. For this evaluation, an emission inventory of HAPs has been prepared from the same set of emission source (i.e., aircraft, GSE, motor vehicles) data and information collected and developed for the criteria-based air emission inventories presented previously in Section 4.4.2.5 of the Final EA. Emissions of 19 different HAPs commonly associated with aviation activities were evaluated in the emission inventory analysis. Separate emission inventories were prepared for the Proposed Action and the No Action alternative. Both emission inventories relied on criteria pollutant emissions data developed for calendar year 2017 – the year within the planning horizon of the Final EA with the greatest level of Grand Canyon helicopter air tour activity. Specifically, data regarding emissions of volatile organic compounds (VOC) were used with industry accepted speciation profiles to develop the HAPs emission inventories.

The HAPs emissions inventory is provided in the Final EA for NEPA disclosure purposes only and should not be relied upon for an assessment of health risks. Furthermore, the results should not be compared to other sources of HAPs in the region or compared to HAP emissions reported at other airports. The purpose of this evaluation was to disclose potential HAP emission levels with and without the construction of the proposed Heliport.

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From: "Brad Hardenbrook" <bhrdnbrk@ndow.org>
To: <pamelaa@mccarran.com>
CC: "Roddy Shepard" <rshepard@ndow.org>
Date: 5/9/2008 4:25 PM
Subject: Draft EA: Proposed Southern Nevada Regional Heliport
Attachments: 2007_NDOW_Gila_Protocol.pdf

Ms. Pamela Adams
Clark County Department of Aviation Planning
P.O. Box 11005
Las Vegas, Nevada 89111-1005

Dear Ms. Adams:

Thank you for the opportunity to review the draft environmental assessment (DEA). Should Clark County Aviation pursue construction and operation of the proposed facility in view of the current and future economic and energy outlook, the proposed action, relative to other locations considered during the scoping phase for the proposed Southern Nevada Regional Heliport (SNRH), poses the least problematic for sustaining regional wildlife populations.

Unfortunately, the DEA is weak in descriptions and evaluations for wildlife (e.g. desert bighorn sheep, Gila monster) and habitat associated with the proposed action in the context of indirect and direct effects. For example, neither the desert bighorn sheep nor Gila monster is a covered species under Clark County's Desert Conservation Program. Conservation benefits to the desert tortoise do not necessarily confer the same to desert bighorn or the Gila monster. Concerning the latter, the Department's protocols for the Gila monster are expected to be part of worker education and construction best management practices (see attached file).

<<2007_NDOW_Gila_Protocol.pdf>>

The past, present and future quality, integrity, and availability of the habitat at the proposed site would seem germane to analyses concerning indirect and cumulative effects. The proposed site for the SNRH is located within wildlife habitat that has over time been encroached upon from previous and existing land uses. Historically, the area served as a movement corridor for desert bighorn sheep between the McCullough Range and Bird Spring Mountains. With construction and maintenance of I-15 in the last several decades, movement corridors there and elsewhere along its alignment are no longer available to desert bighorn. Although fragmented habitat, the area has remained somewhat available for species like the desert tortoise and burrowing owl as indicated by original field surveys performed for this DEA.

The direct, indirect and cumulative effects of the addition of up to 100 overflights per day at varying, safe altitudes in areas where none previously occurred are difficult to quantify. However based upon previous experiences in other areas where aircraft hover or fly over occupied wildlife areas, the short term observable consequences include temporary interruption of daily activities which will diminish over time with consistent flight frequencies and patterns. The indirect and cumulative effects over the long term to wildlife are not

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Comment X (Page 2 of 5)

well-understood; although, the standards for over-flight altitudes in Section 4.10.3 on Page IV-47 would seem adequate. We emphasize that pilots should be conscientious when flying over areas inhabited by wildlife and not harass, pursue, haze or cause undue stress upon those individuals as noted in Section 4.10.2.3 on Page IV-41.

In regards to the congressionally mandated flight paths for the proposed SNRH, the Department believes the southernmost route (Jean) which bypasses the Sloan Canyon NCA and North McCullough Wilderness to the south, would result in the fewest species inhabiting the North McCullough Mountains becoming exposed to or vulnerable to flight-related effects.

From a strictly NEPA standpoint, direct effects to wildlife consequential to the proposed 331 acres of habitat conversion and disturbance are anticipated to be insignificant. However, the present DEA does represent one of many developments projected in contributing to the build-out of the I-15 corridor between the Las Vegas Valley and Primm. In an indirect effects sense, the proposed project represents 331 acres of irreparable habitat incursion from the I-15 alignment into adjacent wildlife habitat. From a cumulative effects perspective, the proposed project is contributing 331 acres of irreplaceable habitat loss, the effects of which will be additive or synergistic to the effects of other past, present, and future actions. Of interest is absence of an alternative where a comparable heliport is analyzed as part of the Southern Nevada Supplemental Airport site between Jean and Primm. As development encroachments continue in the I-15 corridor, localized wildlife populations will become more segmented or isolated, perhaps coincident to increased vulnerability consequential to reductions in habitat quality and size. More active and intensive habitat and population management may become the norm than the exception. Which planning or NEPA process on the horizon will identify the threshold triggering when appropriate conservation actions are engaged and the partnerships for funding and implementing these actions are forged?

If you have any additional questions or concerns, please contact Roddy Shepard, Habitat Biologist, at (702) 486-5127 x3613, or by e-mail at rshepard@ndow.org.

Sincerely,

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Southern Region
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NEVADA DEPARTMENT OF WILDLIFE

Southern Region

4747 W. Vegas Drive, Las Vegas, Nevada 89108

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1 November 2007

GILA MONSTER STATUS, IDENTIFICATION AND REPORTING PROTOCOL FOR OBSERVATIONS

Gila Monster Status

- Per Nevada Administrative Code 503.080, the Gila monster (*Heloderma suspectum*) is classified as a Protected reptile.
- Per Nevada Administrative Codes 503.090, and 503.093, no person shall capture, kill, or possess any part thereof of Protected wildlife without the prior written permission by the Nevada Department of Wildlife (NDOW).

This species is rarely observed relative to other species which is the primary reason for its Protected classification by the State of Nevada. The USDI Bureau of Land Management has recognized this lizard as a sensitive species since 1978. Most recently, the Gila monster was designated as an *Evaluation* species under Clark County's Multiple Species Habitat Conservation Plan (MSHCP). The evaluation designation was warranted because inadequate information exists to determine if mitigation facilitated by the MSHCP would demonstrably cover conservation actions necessary to insure the species' persistence without protective intervention as provided under the federal Endangered Species Act.

The banded Gila monster (*H.s. cinctum*) is the subspecies that occurs in Clark, Lincoln, and Nye counties of Nevada. Found mainly below 5,000 feet elevation, its geographic range approximates that of the desert tortoise (*Gopherus agassizii*) and is coincident to the Colorado River drainage. Gila monster habitat requirements center on desert wash, spring and riparian habitats that inter-digitate primarily with complex rocky landscapes of upland desert scrub. They will use and are occasionally encountered out in gentler terrain of alluvial fans (bajadas). Hence, Gila monster habitat bridges and overlaps that of both the desert tortoise and chuckwalla (*Sauromalus ater*). Gila monsters are secretive and difficult to locate, spending >95% of their lives underground.

The Gila monster is the only venomous lizard endemic to the United States. Its behavioral disposition is somewhat docile and avoids confrontation. But it will readily defend itself if threatened. Most bites are considered illegitimate and consequential to harassment or careless handling. These lizards are not dangerous unless molested or handled and should not be killed.

Scant information exists on detailed distribution and relative abundance in Nevada. The Nevada Department of Wildlife (NDOW) has ongoing management investigations addressing the Gila monster's status and distribution, hence additional distribution, habitat, and biological

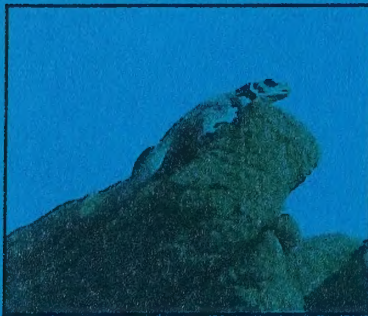
information is of utmost interest. In assistance to gathering additional information about Gila monsters in Nevada, NDOW will be notified whenever a Gila monster is encountered or observed, and under what circumstances (see Reporting Protocol below).

Identification



The Gila monster is recognizable by its striking black and orange-pink coloration and bumpy, or beaded, skin. In keeping with its namesake, the banded Gila monster retains a black chain-link, banded appearance into adulthood. Other lizard species are often mistaken for the Gila monster. Of these, the non-venomous western banded gecko (*Coleonyx variegatus*) and non-venomous chuckwalla are most frequently confused with the Gila monster. All three species share the same habitats.

The western banded gecko is often mistakenly identified as a baby or juvenile Gila monster. Western banded geckos do have a finely granular skin and pattern that can be suggestive of the Gila monster to the untrained eye. However, western banded gecko heads are somewhat pointed at the snout and the relatively large eyes have vertical pupils. Snouts of Gila monsters are bluntly rounded and the smallish eyes have round pupils. Newly hatched Gila monsters are about 5-6 inches long with a vivid orange and black, banded pattern. Adult western banded geckos are at best cream to yellow and brown in pattern and do not exceed 5 inches.



Both juvenile and adult chuckwallas are commonly confused with the Gila monster. Juvenile chuckwallas have an orange and black, banded tail. Although banding of the tail fades as chuckwallas mature, their large adult size (up to 17 inches) rivals that of the Gila monster. Adult chuckwallas have a body shape somewhat suggestive of the Gila monster, but they lack the coarsely beaded skin and black and orange body pattern of the Gila monster.

Reporting Protocol for Gila Monster Observations

Field workers and personnel in southern Nevada should at least know how to: (1) identify Gila monsters and be able to distinguish it from other lizards such as chuckwallas and western banded geckos (see Identification section above); (2) report any observations of Gila monsters to the Nevada Department of Wildlife (NDOW); (3) be alerted to the consequences of a Gila monster bite resulting from carelessness or unnecessary harassment; and (4) be aware of protective measures provided under state law.

- 1) Live Gila monsters found in harms way on the construction site will be captured and then

detained in a cool, shaded environment ($\leq 85^{\circ}\text{F}$) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation, marking and obtaining biological measurements and samples prior to releasing. Despite that a Gila monster is venomous and can deliver a serious bite, its relatively slow gate allows for it to be easily coaxed or lifted into an open bucket or box carefully using a long handled instrument such as a shovel or snake hook (*Note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points*). A clean 5-gallon plastic bucket w/ a secure, vented lid; an 18"x 18"x 4" plastic sweater box w/ a secure, vented lid; or, a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location, Global Positioning System (GPS) coordinates in Universal Transverse Mercator (UTM) using the North American Datum (NAD) 83 zone 11. Date, time, and circumstances (e.g. biological survey or construction) and habitat description (vegetation, slope, aspect, substrate) will also be provided to NDOW.

- 2) Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses will not be covered by NDOW. However, NDOW will be immediately notified of any injury to a Gila monster and which veterinarian is providing care for the animal. If an animal is killed or found dead, the carcass will be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, date, time, habitat, and mapped location (GPS coordinates in UTM using NAD 83 Z 11).
- 3) Should NDOW's assistance be delayed, biological or equivalent acting personnel on site should detain the Gila monster out of harms way until NDOW personnel can respond. **The Gila monster should be detained until NDOW biologists have responded.** Should NDOW not be immediately available to respond for photo-documentation, a digital (5 megapixel or higher) or 35mm camera will be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures will be provided to NDOW at the address above or the email address below along with specific location information including GPS coordinates in UTM using NAD 83 Z 11, date, time and habitat description. Pictures will show the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

Please contact NDOW Biologist Polly Conrad at (702) 486-5127 x3718 or by e-mail at pconrad@ndow.org for additional information regarding these protocols.

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Response to Comments in Correspondence X - Nevada Department of Wildlife

Response to Comment X-1

Comment noted.

Response to Comment X-2

Assessment of direct and indirect impacts Nevada State listed and BLM sensitive species are provided in Sections 3.11 and 4.10 of the Final EA. More detailed descriptions and evaluations of State listed and BLM sensitive species are provided in the Appendix A of the Biological Assessment (see Appendix I of the Final EA).

Response to Comment X-3

No individual banded Gila monsters were observed and suitable habitat was not identified in the "action area" (i.e., South of Sloan site and utility corridors). Per NDOW's request, the worker education program will be expanded to include Banded Gila monster identification, reporting, and management.

Response to Comment X-4

While the FAA and the CCDOA have limited control over the location of helicopter flight paths (other than FAA control within controlled airspace surrounding public use airports), the CCDOA will continue to coordinate with the Grand Canyon air tour operators to minimize disturbance of wildlife to the extent possible. As mentioned in Section 1.2 of the Final EA, an essential element of the helicopter air tour is to maximize the tour time at the Grand Canyon, not to take scenic detours. Grand Canyon helicopter air tours typically follow direct routes with limited *ad hoc* deviations to other points of interest due to helicopter fuel capacity limitations, time demands, and operating costs.

Response to Comment X-5

Because neither the CCDOA nor the FAA has the authority to mandate flight corridors or the use of those corridors in uncontrolled airspace, the flight corridors depicted in the Final EA are intended to be illustrative of where Grand Canyon helicopters would fly under the Proposed Action and No Action alternatives and are the best available for analysis purposes. It is anticipated that under the Proposed Action the Grand Canyon helicopter operators would most likely follow the McCullough corridor, because the corridor provides the most direct route between the South of Sloan site and the Rendezvous Point. The potential Jean corridor is comparatively longer than the other two potential flight corridors by about 10 miles (one-way) resulting in higher operating/fuel costs. Further, helicopters following the Henderson corridor would be required to pass through the Class D airspace serving Henderson Executive Airport. Given the choice, helicopter operators would prefer to fly outside of the Class D airspace, thereby avoiding coordination with air traffic controllers at Henderson Executive which could result in delays to helicopter operations to allow fixed-wing aircraft operations to occur. Following the McCullough corridor would allow the helicopters to remain outside of controlled airspace for the entire journey to the Rendezvous Point.

With regard to the commenter noting that the potential Jean flight corridor would result in the fewest species becoming exposed to or vulnerable to flight-related effects compared to the potential McCullough corridor that would overfly the North McCullough Wilderness Area, as established by Congress, imposed the corridor for helicopter air tour operations within the Sloan Canyon NCA specifically to protect the petroglyphs and bighorn sheep. The legislation for the transfer of the

South of Sloan site makes specific requirements of the for-profit helicopter air tour flights that leave from or return to a heliport on this parcel and are flown through the Sloan Canyon NCA. One requirement is that the helicopters be flown along a defined two-mile-wide corridor through the Sloan Canyon NCA; this defined corridor avoids the highest ridges in the Sloan Canyon NCA and big game guzzler (i.e., water catchment) locations. Another requirement is that the helicopters be flown at a minimum altitude of between 500 feet and 1,000 feet above ground level for operations on the western border and eastern border of the Sloan Canyon NCA, respectively. Flights occurring outside of the Sloan Canyon NCA do not have to meet these requirements. A practice that is common-place for the operators today, and that is anticipated to continue, is for the helicopter pilot to maintain a minimum altitude of 500 feet above the ground. As illustrated on Exhibit IV-1 in the Final EA, following the Jean flight corridor would result in a flight that is nearly five miles longer than a flight along the McCullough flight corridor and would take the helicopter air tours out of their way to reach the Grand Canyon. Because of the limited time for the air tours and the additional cost of fuel for the helicopter operations along the Jean corridor, it would not be a favorable route for Grand Canyon helicopter air tours.

As discussed in Section 3.3.3 of the Final EA and the Biological Assessment (provided in Appendix I), it is expected that up to 160 daily helicopter operations to and from the Grand Canyon may occur through the Sloan Canyon NCA in 2011. This number is anticipated to increase up to 200 daily helicopter operations in 2017. However, because helicopter operations would be voluntarily confined to narrow flight corridors through potential bighorn sheep habitat in the Sloan Canyon NCA, the potential areas of disturbance would be limited and the duration of potential disturbance would be brief. Based on these factors and the Sloan Canyon NCA helicopter flight restrictions, overflights of helicopters through the Sloan Canyon NCA are not expected to have significant impacts on bighorn sheep. Therefore, it is not anticipated that the Proposed Action would substantially impact the desert bighorn sheep.

Response to Comment X-6

The spatial boundary used for the identification of projects to be considered under cumulative effects is described in Section 3.17 of the Final EA as the area within one mile of the Heliport site and along or adjacent to the proposed utility corridors. The U.S. Fish and Wildlife Service has issued a Biological Opinion, dated July 1, 2008, stating that “[a]fter reviewing the current status of the desert tortoise and its critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is the Service’s biological opinion that the project, as proposed and analyzed, is not likely to jeopardize the continued existence of the threatened desert tortoise (Mojave population).” The Biological Opinion, as issued, is provided in Appendix I of the Final EA.

Per FAA Order 1050.1E paragraph 405e, past, present, and reasonably foreseeable future actions should be considered in the evaluation of the cumulative effects (40 CFR 1508.7) of these actions on the affected environment. The Council on Environmental Quality regulations for implementing NEPA requires evaluation of cumulative effects of a proposed project and the no action alternative. Table III-13 of the Final EA provides a summary of projects that have been completed, currently ongoing, and projects that are anticipated to be completed in the foreseeable future within 1 mile of the Heliport site or along or adjacent to the proposed utility corridors, along with other notable known projects near the Heliport site that could have the potential to result in cumulative effects with construction and operation of the Heliport. The assessment of cumulative effects is presented in Section 4.22 of the Final EA. As described in that section, the period considered for past actions is

1995-2006, the period considered for currently ongoing actions is 2007-2008, and the period considered for reasonably foreseeable future actions is 2009-2020. Past actions located within the defined spatial boundary considered for the analysis of cumulative effects include the 3,500 acres of land annexation of land by the City of Henderson, creating the West Henderson Planning Area; past development of a GoKart facility at Sloan (no longer an active facility); and a 4.5-acre, fenced area used for vehicle storage and a billboard. Present actions considered for analysis of cumulative effects include construction of a reservoir, including pipeline, to provide water services to areas in South Clark County. Reasonably foreseeable future actions include NDOT's planned expansion of I-15 between Sloan Road to Tropicana Avenue; a proposed Southern Nevada Supplemental Airport in the Ivanpah Valley about 15 miles south; and a proposed mining project located about three miles north of the Heliport site.

Response to Comment X-7

As stated in Section 2.2.1 of the Final EA, 13 sites at various locations within the Las Vegas region were assessed for their ability to meet the statutory intent of the amendments to NRS 495 and the goals and objectives and facility requirements documented in the *Needs Assessment for a Southern Nevada Regional Heliport*. (Also see Appendix C of the Final EA). As further described in Section 2.2.2 of the Final EA, an additional site – the proposed South of Sloan site – was identified following the completion of the *Site Suitability Assessment for a Southern Nevada Regional Heliport*. The criteria used to evaluate the identified sites are presented in Section 2.3 of the Final EA. Based on the analysis completed in those planning studies and the screening criteria presented in Section 2.3 of the Final EA, locating the proposed Heliport at the proposed Southern Nevada Supplemental Airport site would not satisfy the purpose and need of the proposed action, because the distance and drive time would exceed the identified maximum thresholds that would allow for viable helicopter tours of the Grand Canyon. As discussed in Section 2.3.3 of the Final EA, surface accessibility and drive time are critical to the viability of Grand Canyon helicopter air tours as tourists who choose helicopter tours do not want to devote more than about half a day to visit the Grand Canyon. Unlike a typical public use airport, the site for basing Grand Canyon helicopter air tours to serve Las Vegas must be located such that operators can provide drive times for limousines and buses providing ground access that are consistently low enough to preserve a viable tour operation.

Response to Comment X-8

In accordance with CEQ regulations, the cumulative effects analysis conducted as part of the Final EA considered, to the extent practicable, the known projects within the temporal and spatial boundaries defined in Section 4.22 of the Final EA. These projects include: annexation of land by the City of Henderson, creating the West Henderson Planning area, a former GoKart facility, vehicle storage and billboard site for past action projects. Current/Present actions considered include the Bermuda 2745 Zone Pumping Station Discharge Pipeline Phase II and Sloan 2745 Zone Reservoir Site in Sloan. Reasonably foreseeable future actions include widening of I-15 South, the proposed Southern Nevada Supplemental Airport 15 miles south of the Heliport site, proposed Rinker Materials for mining activities, and potential development within the West Henderson Planning Area. There are no area-wide conservation actions identified as part of this Final EA, nor is funding available for conservation partnerships.

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**National Park Service
Lake Mead National Recreation Area
601 Nevada Way
Boulder City, Nevada 89006**

Date: May 9, 2008

To: Pamela Adams, Principal Planner
Clark County Department of Aviation
FAX (702) 798-6591

Subject: Comments: Draft Environmental Assessment Proposed Southern Nevada
Regional Heliport

NUMBER OF PAGES INCLUDING THIS COVER SHEET 7

William K. Dickinson, Superintendent
Lake Mead National Recreation Area
Phone: 702/293-8920
Fax: 702/293-8936

United States Department of the Interior



NATIONAL PARK SERVICE

LAKE MEAD NATIONAL RECREATION AREA
601 NEVADA WAY
BOULDER CITY, NEVADA 89005

IN REPLY REFER TO:

LAME D18 (LAME-SUPT)

May 9, 2008

Pamela Adams, Principal Planner
Clark County Department of Aviation
P.O. Box 11005
Las Vegas, NV 89111-1005

**RE: Draft Environmental Assessment for the Proposed Southern Nevada Regional
Heliport, Clark County, Nevada**

Dear Ms. Adams:

We have reviewed the referenced document and offer the following comments:

General Comments

1. Acoustic monitoring is currently being conducted at Lake Mead National Recreation Area by park staff. The consideration of acoustic data from within the park boundary would have contributed to a more thorough and comprehensive analysis of noise impacts to park resources and values. Z-1
2. We believe that the noise analysis was inadequate for determining direct, indirect, and cumulative impacts to Lake Mead National Recreation Area (including Black Canyon Wilderness Area) resources and values. None of the grid points analyzed in the EA were located within the park; therefore the EA fails to adequately assess impacts to park resources from noise. Additional analysis is required before we can concur with current impact determinations. Z-2

Chapter 2

3. Exhibit II-3 *Assumed Flight Corridors under the Proposed Action* illustrates the flight corridors for the proposed action including crossing the northern portion of the Black Canyon Wilderness. In our previous discussions with the Federal Aviation Administration, we identified a corridor for accessing Hoover Dam that protected this Wilderness. Basically, the southern edge of the corridor was north of Goldstrike Canyon, the first major drainage on the Nevada side south of Hoover Dam. This area has been designated a Traditional Cultural Property for its ethnographic value to Native American tribes.

Over the last fifteen years, we have actively participated in the transportation planning with the Federal Highway Administration and many other agencies for US Highway 93. This

2

included highway realignments associated with the construction of the new bridge and a bypass proposed around Boulder City. The corridor that has been selected along the eastern side of Boulder City and crossing the Colorado River went through extensive environmental analysis including Section 4(f) of the U.S. Department of Transportation Act of 1966.

Based on the value of protecting the wilderness values of the Black Canyon Wilderness, the ethnographic values of the Goldstrike Canyon Traditional Cultural Property and honoring the extensive transportation planning in Nevada that has already been completed for this area, we respectfully request the "*Assumed Flight Corridors under the Proposed Action*" be modified to follow the "transportation corridor identified in previous transportation analysis and planning."

4. Exhibit II-3 *Assumed Flight Corridors under the Proposed Action* identifies an area as Rendezvous Point in Arizona. This site is located along the Wilson Ridge of the Black Mountains just east of Hoover Dam. The entire area is included in proposed wilderness in the General Management Plan for Lake Mead National Recreation Area. National Park Service Management Policies require this area be managed to maintain its wilderness values. Sugarloaf Mountain, located immediately south of Hoover Dam, is also designated a Traditional Cultural Property.

The Black Mountains support the largest heard of bighorn sheep within the State of Arizona. The concentrated scenic helicopter activity at Rendezvous Point is intense as the traffic exits the Hoover Dam area and continues east. We have stationed acoustical monitoring equipment at this location and our data show that aircraft routinely fly at altitudes below 1,500' AGL. A review of acoustic data for 9 summer days in 2007 (1060 flights) indicated that nearly all of the flights were below 1,500' AGL and more than 90% were below 1,000' AGL (See Attached Table).

In previous discussions with the Federal Aviation Administration, we proposed the relocation of the flight corridor between Hoover Dam and Temple Bar to follow the approximate shoreline of Lake Mead to eliminate the need for the helicopters to climb above the ridge immediately east of Hoover Dam. The shoreline route would also protect the wilderness values associated with the proposed wilderness.

5. Exhibit II-3 *Assumed Flight Corridors under the Proposed Action* does not show a flight corridor crossing Lake Mohave south of the Hoover Dam area. We believe return flights from the Grand Canyon will take a more direct route to Sloan Heliport yet no such routes are included in the analysis. We are concerned with this practice as there are only a few areas where commercial scenic overflights may be appropriate due to Wilderness designation. It is our preference to see the return flights follow the alignments already discussed or follow the Henderson alignment.

Chapter 3

6. Page III-10, 3.5.2 *2004 Noise Monitoring Program*: states: "Continuous noise monitoring for a minimum of 24 hours was conducted at the 10 locations..." Analyses conducted by NPS indicate that one day of data is not statistically adequate for determining ambient conditions. Sound sources can vary significantly from day-to-day, and thus we do not believe that collecting data for one day provides an accurate assessment of the existing conditions at the particular site. Our protocol is to monitor for a period of time sufficient to ensure a degree of error less than ± 3 dB.

Chapter 4

7. Page IV-35, concludes *"It is anticipated that there would be no substantial interference with the use or enjoyment of Section 4(f) lands or other park and recreational facilities, no substantial impairment of the attributes of Section 4(f) lands, and no substantial diminishment of the access to, the utility of, or the value of Section 4(f) lands under the Proposed Action."* FAA has recognized the importance of National Park soundscapes and the need to conduct a more thorough analysis than the standard Part 150 Land Use Compatibility Analysis. Supplemental analysis must be considered under FAA Order 1050.1E which states: *"Additional factors must be weighed in determining whether to apply the thresholds listed in Part 150 guidelines to determine the significance of noise impacts on noise sensitive areas within national parks . . . For example, Part 150 guidelines may not be sufficient for all historic sites (see 6.2h above) and do not adequately address the effects of noise on the expectations and purposes of people visiting areas within a national park or national wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute."*

The acoustic data and analysis provided in the EA is insufficient for NPS to concur with the FAA finding. The insufficiencies include:

- (1) The analysis does not provide the natural ambient sound levels under proposed flight corridors over Lake Mead National Recreation Area. NPS is mandated by Section 8.2.3 of the 2006 NPS Management Policies to use natural ambient sound level as the baseline condition for impact analysis. *"The natural ambient sound level – that is, the environment of sound that exists in the absence of human-caused noise – is the baseline condition, and the standard against which current conditions in a soundscape will be measured and evaluated (NPS Management Policies 2006)."* In order to adequately assess impacts from overflights under the proposed action natural ambient sound levels must be known. Z-7
- (2) The determination that there will be no constructive use, is based on data collected outside the boundary of the park. Accurate determinations of the impacts to park resources and values are not possible without knowledge of baseline ambient conditions under the flight corridors within the Park and the characteristics of noise generated by proposed action. The following are specific areas where we recommend additional monitoring be conducted: (1) **South of Lake Mead where three flight corridors, Jean, Henderson, and Tropicana converge over the park** - This convergence of flights occurs directly over the Hoover Dam as well as over Desert Bighorn Sheep foraging and lambing grounds. Please see comment #8 for additional discussion of helicopter impacts on Bighorn Sheep. (2) **Rendezvous Point** - A lot of flight activity would occur at this location and thus we believe that a monitoring site should be set up there. (3) **Under flight corridors of Jean, Henderson, or Tropicana** - while there are several noise monitoring sites set up under these corridors within the overall study area, none of them are located within the park boundary. We believe that another monitoring site should be located under either the Jean, Henderson, or Tropicana flight corridors, within LMNRA. Z-8
- (3) The use of DNL as the only metric to determine impacts to park resources and values is insufficient. Additional noise metrics should be used to assess impacts to park Z-9

resources and values. This analysis should be supplemental to the FAA's traditional analysis using DNL and the Part 150 Land Use Compatibility guidelines. Many of the metrics are easily calculated using INM 6.2. Examples of additional metrics include:

Lmax	Peak noise exposure level, useful to identify the most acute exposure conditions.
Time above natural ambient + 3 dBA	The amount of time per day during which air tour aircraft noise is 3dBA or more above natural ambient. This sound level relates to a 50% loss of listening area for humans and wildlife.
Time above 52 dBA	The amount of time per day during which air tour aircraft noise is above 52dBA. This is the noise level that is likely to cause interference with interpretive programs.

- (4) Page IV-35 (Third Paragraph) states: *"Since the grid points R1 and R2 are representative of all areas along the Tropicana and Charleston corridors, it may be concluded that helicopter noise exposure and the corresponding number of helicopter over-flights would be less under the Proposed Action than under the No Action Alternative along those routes."* Since neither of those grid points are within the park boundary and neither of those sites are managed as a park, the statement that these points are representative of all areas under the proposed routes is unsupported.

- (5) The presentation of noise impacts should include spatial maps identifying contours for noise metrics for proposed routes over the Park. Noise contour maps of Lmax, % time audible, and other metrics would provide important information about the noise generated by airtours under the proposed routes. These maps would provide park staff and public stakeholders with a clear and informative presentation of impacts from the proposed action. These maps would provide a much more complete framework for evaluating potential impacts.

8. Page IV-44, *Desert Bighorn Sheep*: Research has indicated that helicopter overflights can disturb Desert Bighorn Sheep. For example, a study by Stockwell and Bateman (1991), *"Conflicts in National Parks: A Case Study of Helicopters and Bighorn Sheep Time Budgets at the Grand Canyon,"* showed that helicopters can contribute to a loss of foraging efficiency for Bighorn Sheep. As the EA indicates, the proposed flight corridors go over important Bighorn Sheep habitat. For example, an important Desert Bighorn Sheep foraging and lambing area is located near the Hoover Dam (just south of Lake Mead) where the three

4
Z-9

Z-10

Z-11

Z-12

flight corridors, Jean, Henderson, and Tropicana converge. The EA should disclose this potential effect.

5
Z-12

9. Page IV-46, *General Wildlife* (Last paragraph on the page): It says, "*Helicopter overflights are not likely to disturb wildlife if a minimum of 1,500 feet vertical distance is maintained.*" Can you please provide the rational or citation for this statement. It would also be valuable to provide some discussion of how the such minimum vertical distances are monitored and enforced.

Z-13

10. Page IV-55, *4.17 Visual Resources*: A visual analysis should be conducted to assess potential impacts to visitors to Lake Mead from seeing aircraft on the proposed routes. Visitors to backcountry areas and Wilderness often seek to experience "outstanding opportunities for solitude" and other wilderness characteristics. The sight (and sound) of aircraft can greatly affect opportunities for a backcountry or wilderness experience. The EA should address this potential impact.

Z-14

11. Page IV-65, *4.22.2 Analysis of Cumulative Effects - 4.22.2.1 Noise*: The list of past, present, and reasonably foreseeable actions should include the Grand Canyon Overflights EIS currently being prepared (*EIS for Special Flight Rules Area In The Vicinity Of The Grand Canyon National Park*). Since we do not believe that adequate analysis of current impacts from noise was completed, it is difficult for us to concur with the cumulative effects. Once further noise analysis is completed with regards to NPS resources and values, we can provide additional comments on cumulative effects.

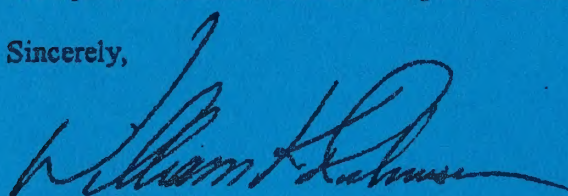
Z-15

12. Away from Lake Mead National Recreation Area, we are encouraged to see the Jean Corridor identified as an alternative to the McCullough Corridor. Use of this corridor will help protect the values of the Sloan Canyon National Conservation Area and the North McCullough Wilderness.

Z-16

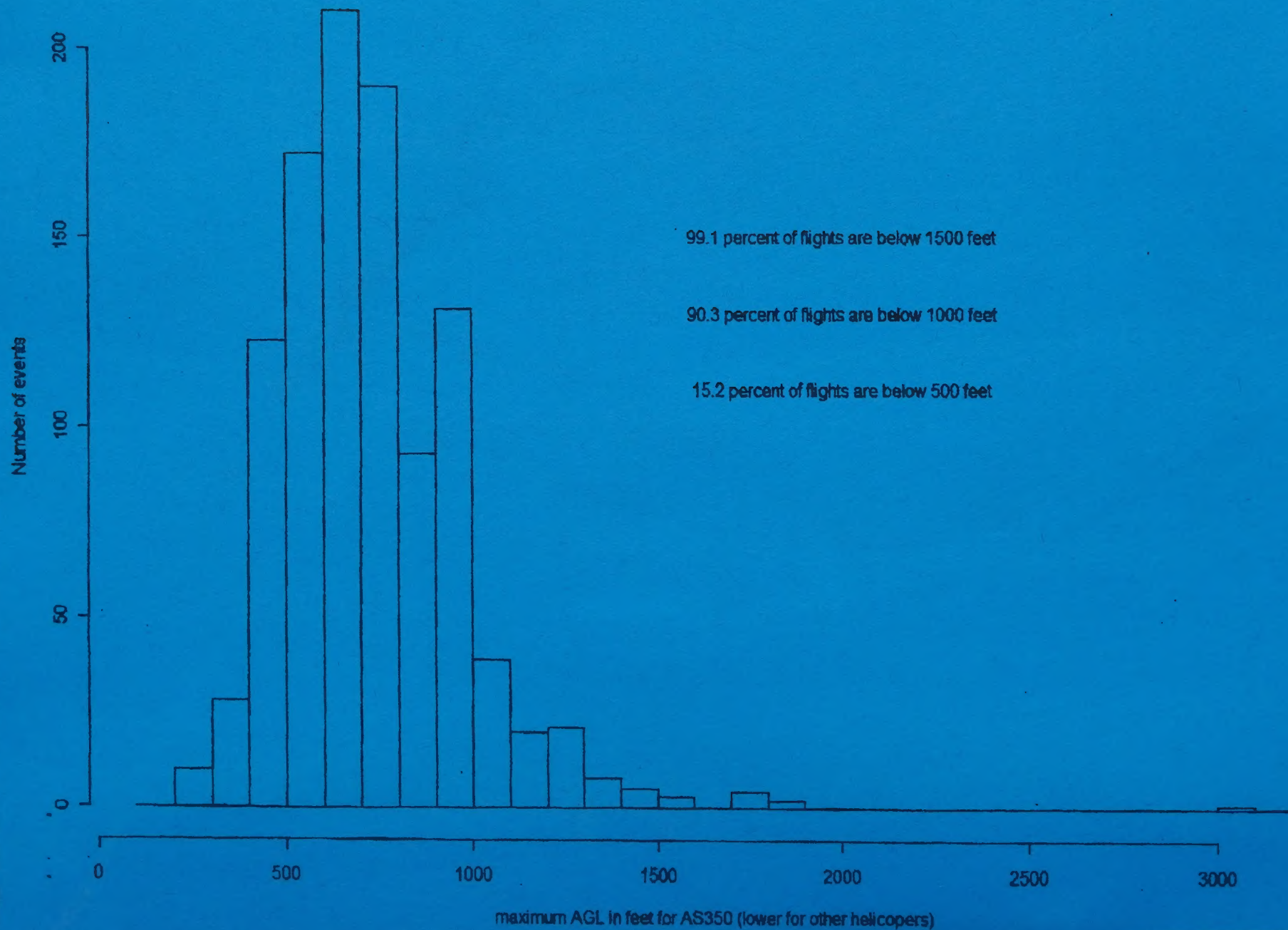
We appreciate the opportunity to comment on the proposed heliport. Should you have questions or require additional information, please contact Park Planner Jim Holland at (702) 293-8986.

Sincerely,



William K. Dickinson
Superintendent

Distribution of Maximum AS350 AGL for 9 summer days in 2007 (1060 events)



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Response to Comments in Correspondence Z – National Park Service

Response to Comment Z-1

The noise analysis for the Final EA is considered adequate as it meets FAA requirements as set forth in FAA Order 1050.1E. The FAA has adopted DNL as the primary measure for conducting noise analysis and may also rely on DNL measurements in making determinations under the Department of Transportation (DOT) Act Section 4(f). Supplemental noise metrics may be employed to the extent that they are necessary for the FAA to make such a determination. Supplemental noise metrics, including the Maximum A-weighted Sound Level ($L_{\max}$), Equivalent Energy Sound Level (L_{eq}) and Sound Exposure Level (SEL) were used to provide additional information concerning existing ambient noise levels and single event noise exposure resulting from helicopter overflights at a range of altitudes and distances from potential noise-sensitive receptors. Refer to Appendix D of the Final EA for a more detailed discussion of the use of supplementary noise metrics.

Noise measurements/acoustic monitoring was conducted in support of the Draft EA at ten locations within the defined Study Area in 2004. As described below, some of those sites are representative of acoustic conditions within the Lake Mead National Recreation Area. The noise monitoring program is described in Section 3.5.2 and Appendix D of the Final EA.

Ambient noise levels were measured in close proximity to the Lake Mead National Recreation Area. See Exhibit III-5 of the Final EA with particular reference to Ambient Noise Monitoring Sites R1 and R2. Additionally, Sites R5, R6 and R7 were located in the Sloan Canyon NCA where the ambient noise environment is considered representative of wilderness areas or parklands located away from roadways or developed areas such as within the more isolated areas of the Lake Mead National Recreation Area.

Site R1 was located approximately $\frac{3}{4}$ mile northwest of North Shore Road near the western boundary of the Lake Mead National Recreation Area. Traffic on North Shore Road was not audible from the site, which was located in the bottom of a dry wash with surrounding terrain features that effectively interrupted line-of-sight view of the roadway. Audible sources of noise at Site R1 included fixed-wing aircraft associated with McCarran International Airport operations, air tour helicopters returning from the Grand Canyon on the existing Charleston corridor and wind in the surrounding vegetation. Site R2 was located approximately $\frac{1}{4}$ mile southeast of East Lake Mead Parkway. Audible sources of noise at that location included roadway traffic, fixed-wing aircraft associated with McCarran International Airport operations and outbound Grand Canyon air tour helicopters on the existing Tropicana corridor.

Ambient noise monitoring included collection of acoustic data in terms of the daily DNL and the hourly L_{eq} , $L_{\max}$ and L_{90} metrics. Hourly noise measurement data provided additional insight into existing ambient noise level conditions in areas either currently overflown by air tour helicopters or that could be overflown as a result of the Proposed Action. The L_{90} represents the noise level exceeded 90 percent of the time during a sample interval, and is representative of residual, or background, noise levels in the absence of individual noise events. The L_{90} is a slightly *higher* value than the minimum noise level during a sample interval and is a numerically *lower* value than the L_{50} or L_{eq} during the same interval period. In areas removed from roadways or developed areas, the L_{90} approximates the natural ambient noise level. The terrain, vegetation and climatic conditions at Sites R1, R5, R6 and R7 are comparable to the terrain, vegetation and climatic conditions in areas of the Lake Mead National Recreation Area beneath existing or proposed helicopter flight corridors.

Notwithstanding the discussion regarding the adequacy of noise monitoring and the noise analysis in the Draft EA, and in response to this and related comments from this commentor, ambient noise level measurements conducted by the FAA for an un-related project, as reported in "Baseline Ambient Sound Levels in Lake Mead National Recreation Area" (DOT-VNTSC-FAA-06-13), April 2006, were evaluated and incorporated as appropriate into the Final EA. Specifically, ambient noise monitoring data from two sites (L05 and L07) located near existing or proposed helicopter flight routes within the Lake Mead National Recreation Area have been added to Tables III-2, IV-1 and D-5 of the Final EA to provide additional supporting information on existing ambient noise levels within the park. The referenced FAA noise monitoring sites have also been noted on Exhibits III-5 and IV-5 of the Final EA. The review and consideration of the additional information in no way changes any finding in terms of potential effects on Lake Mead National Recreation Area associated with the Proposed Action.

Section D.4 of the Final EA contains a detailed discussion of the methods and findings of the ambient noise monitoring program, including a photo of each site where noise measurement data was collected.

Response to Comment Z-2

The noise analysis for the Final EA is considered adequate as it meets FAA requirements as set forth in FAA Order 1050.1E. Grid Point G2 was located within Lake Mead National Recreation Area, directly beneath the existing Tropicana corridor for outbound Grand Canyon tour helicopters at the Lake Mead shoreline (see Exhibit IV-5 and Table IV-1 in the Final EA). The calculated DNL values for 2011 forecast operations at that location were 42-47 dB for the No Action alternative and 38-43 dB for the Proposed Action. For 2017, the calculated DNL values at Grid Point 2 were 44-48 dB for the No Action alternative and 39-43 dB for the Proposed Action.

Notwithstanding the discussion regarding the adequacy of noise monitoring and the noise analysis in the Draft EA, and in response to this and related comments from this commentor, ambient noise level measurements conducted by the FAA for an un-related project, as reported in "Baseline Ambient Sound Levels in Lake Mead National Recreation Area" (DOT-VNTSC-FAA-06-13), April 2006, were evaluated and incorporated as appropriate into the Final EA. Specifically, ambient noise monitoring data from two sites (L05 and L07) located near existing or proposed helicopter flight routes within the Lake Mead National Recreation Area have been added to Tables III-2, IV-1 and D-5 of the Final EA to provide additional supporting information on existing ambient noise levels within the park. The referenced FAA sites have also been noted on Exhibits III-5 and IV-5 of the Final EA. The review and consideration of the additional information in no way changes any finding in terms of potential effects on Lake Mead National Recreation Area associated with the Proposed Action.

As described in the text, a range of calculated DNL values is shown to account for potential variations in helicopter altitudes ranging from 300 to 1500 feet above the ground level at the grid point locations. As further described in the text, it is reasonable to assume that the same range of predicted DNL values would occur under the No Action or Proposed Action alternatives at any location along existing or potential corridors as long as helicopter altitudes are in the range of 300 to 1500 feet above the ground. At altitudes greater than 1500 feet above the ground, or in locations that are not directly beneath an existing or potential flight corridor, helicopter noise exposure would be less, and in all cases, well below the 65 dB DNL threshold of significance applicable to most land uses.

It is the FAA's responsibility under DOT Act Section 4(f) is to determine whether the Proposed Action would "use" a resource protected under Section 4(f). The concurrence of the National Park Service with the FAA's determination is not required. It was recognized in the Draft EA that the Lake Mead National Recreation Area is a resource covered by Section 4(f). As explained further in response to additional comments from this commenter, the analysis conducted for the Final EA establishes that the Proposed Action would not have a significant noise impact or use this resource.

Response to Comment Z-3

Exhibit II-3 of the Final EA presents potential flight corridors under the Proposed Action based on consultation with the helicopter operators, the FAA, and other stakeholders. While Public Law 109-115, Section 180 mandates a specific corridor above the Sloan Canyon NCA, outside the Sloan Canyon NCA the flight corridors are more illustrative. The potential flight corridors presented on Exhibit II-3 were used to assess potential impacts associated with the Proposed Action; the actual flight corridors used by the helicopter operators may vary. The Proposed Action does not include the establishment or implementation of any corridors to be used by helicopter operators.

The CCDOA will collaborate with the Grand Canyon air tour operators, the FAA and the National Park Service to address concerns regarding potential flight corridors and to encourage the helicopter air tour operators to avoid overflying noise-sensitive resources identified in Lake Mead National Recreation Area.

The CCDOA recognizes that the FAA and the National Park Service are in the process of developing an Air Tour Management Plan to regulate air tours specific to Lake Mead National Recreation Area. This plan would identify potential flight corridors for LMNRA-specific air tour activity and may identify areas that should be avoided because of their noise sensitivity.

Response to Comment Z-4

As reflected in Exhibit IV-5 of the Final EA, the potential flight corridors between Hoover Dam and the Rendezvous Point would be substantially the same as the Tropicana corridor currently in use, and the Proposed Action would not affect overflights east of the Rendezvous Point. Thus, the Proposed Action evaluated in the Final EA would not substantially change helicopter corridors between Hoover Dam and Temple Bar from existing conditions.

The CCDOA will collaborate with the Grand Canyon air tour operators, the FAA, and the National Park Service to address concerns regarding potential flight corridors and to encourage the helicopter air tour operators to avoid overflying noise-sensitive resources identified in Lake Mead National Recreation Area.

The CCDOA recognizes that the FAA and the National Park Service are in the process of developing an Air Tour Management Plan to regulate air tours specific to Lake Mead National Recreation Area. This plan would identify potential flight corridors for LMNRA-specific air tour activity and may identify areas that should be avoided because of their noise sensitivity.

As discussed above, the potential flight corridors between the Hoover Dam and the Rendezvous Point would be substantially the same as the existing Tropicana flight corridor. Although the Proposed Action does not include the establishment or implementation of any corridors to be used by the Grand Canyon helicopter air tour operators, potential helicopter noise impacts to wildlife were analyzed in the Final EA. Analysis presented in Section 4.10.2.3 of the Final EA shows that

outbound helicopter flights on the Henderson, McCullough, Jean, and the outbound-only Tropicana corridors would likely cross higher terrain with a ground clearance of about 560 feet above ground level at the ridgeline near the Rendezvous Point; inbound flights on the same flight corridors would likely overfly higher terrain with a ground clearance of about 1,060 feet. Flights on the inbound-only Strip Railroad and the existing inbound-only Charleston corridors would likely have a ground clearance of about 1,500 feet above ground level at the ridgeline near the Rendezvous Point.

Helicopter overflights of the LMNRA could potentially cause the temporary displacement of wildlife in several locations, although a significant majority of the habitat areas beneath the helicopter flight corridors would not be affected. In particular, three areas within the LMNRA would experience overflights between 500 and 1,300 feet AGL, which may cause the desert bighorn sheep to be startled and move away for a short period of time. These locations are along the ridgeline near the Rendezvous Point where the existing helicopter flight corridors currently crosses, near the higher terrain northwest of Boulder City, and along the western border of the LMNRA. In locations where the terrain would cause ground clearances to be less than 1,000 feet above ground level, helicopter flight altitudes under the Proposed Action would be the same as existing helicopter flight altitudes and helicopter flight altitudes under the No Action alternative. It is noted that helicopter air tour operators do not routinely hover over wildlife, a practice that is not anticipated to change under the Proposed Action, and the duration of any disturbance to wildlife therefore is and would remain brief. Because there are few material changes between the Proposed Action and No Action alternatives in terms of impacts on bighorn sheep, no significant impact to the bighorn sheep is expected to occur under the Proposed Action. The minimum vertical distances at which helicopters might be flown cannot be enforced through the process of, or as a result of, this Final EA; however, the CCDOA would encourage helicopter operators to maintain horizontal and vertical clearances, when operationally feasible and safe, to minimize potential effects of helicopter activity on wildlife.

Response to Comment Z-5

Exhibit II-3 of the Final EA presents potential flight corridors under the Proposed Action based on consultation with the helicopter operators, the FAA, and other stakeholders. While Public Law 109-115, Section 180 mandates a specific corridor above the Sloan Canyon NCA, outside the Sloan Canyon NCA the flight corridors are more illustrative. The potential flight corridors presented on Exhibit II-3 were used to assess potential impacts associated with the Proposed Action; the actual flight corridors used by the helicopter operators may vary. The Proposed Action does not include the establishment or implementation of any corridors to be used by helicopter operators.

The CCDOA will collaborate with the Grand Canyon air tour operators, the FAA, and the National Park Service to address concerns regarding potential flight corridors and to encourage the helicopter air tour operators to avoid overflying noise-sensitive resources identified in Lake Mead National Recreation Area.

The CCDOA recognizes that the FAA and the National Park Service are in the process of developing an Air Tour Management Plan to regulate air tours specific to Lake Mead National Recreation Area. This plan would identify potential flight corridors for LMNRA-specific air tour activity and may identify areas that should be avoided because of their noise sensitivity.

Response to Comment Z-6

Noise measurements/acoustic monitoring was conducted in support of the Draft EA at ten locations within the defined Study Area in 2004. Some of those sites are representative of acoustic conditions

within the Lake Mead National Recreation Area. The noise monitoring program is described in Section 3.5.2 and Appendix D of the Final EA. Refer to Appendix D of the Final EA for a more detailed discussion of the ambient noise monitoring program.

Notwithstanding the discussion regarding the adequacy of noise monitoring and the noise analysis in the Draft EA, and in response to this and related comments from this commentor, ambient noise level measurements conducted by the FAA for an un-related project, as reported in "Baseline Ambient Sound Levels in Lake Mead National Recreation Area" (DOT-VNTSC-FAA-06-13), April 2006, were evaluated and incorporated as appropriate into the Final EA. Specifically, ambient noise monitoring data from two sites (L05 and L07) located near existing or proposed helicopter flight routes within the Lake Mead National Recreation Area have been added to Tables III-2, IV-1 and D-5 of the Final EA to provide additional supporting information on existing ambient noise levels within the park. The referenced FAA noise monitoring sites have also been noted on Exhibits III-5 and IV-5 of the Final EA. The review and consideration of the additional information in no way changes any finding in terms of potential effects on Lake Mead National Recreation Area associated with the Proposed Action.

Response to Comment Z-7

The FAA has adopted DNL as the primary measure for conducting noise analysis and may also rely on DNL measurements in making determinations under the DOT Section 4(f). Supplemental noise metrics may be employed to the extent that they are necessary for the FAA to make such a determination. Supplemental noise metrics, including the Maximum A-weighted Sound Level (L_{max}), Equivalent Energy Sound Level (L_{eq}) and Sound Exposure Level (SEL) were used to provide additional information concerning existing ambient noise levels and single event noise exposure resulting from helicopter overflights at a range of altitudes and distances from potential noise-sensitive receptors. Refer to Appendix D of the Final EA for a more detailed discussion of the use of supplementary noise metrics.

Noise measurements/acoustic monitoring was conducted in support of the Draft EA at ten locations within the defined Study Area in 2004. As described below, some of those sites are representative of acoustic conditions within the Lake Mead National Recreation Area. The noise monitoring program is described in Section 3.5.2 and Appendix D of the Final EA.

Notwithstanding the discussion regarding the adequacy of noise monitoring and the noise analysis in the Draft EA, and in response to this and related comments from this commentor, ambient noise level measurements conducted by the FAA for an un-related project, as reported in "Baseline Ambient Sound Levels in Lake Mead National Recreation Area" (DOT-VNTSC-FAA-06-13), April 2006, were evaluated and incorporated as appropriate into the Final EA. Specifically, ambient noise monitoring data from two sites (L05 and L07) located near existing or proposed helicopter flight routes within the Lake Mead National Recreation Area have been added to Tables III-2, IV-1 and D-5 of the Final EA to provide additional supporting information on existing ambient noise levels within the park. The referenced FAA noise monitoring sites have also been noted on Exhibits III-5 and IV-5 of the Final EA. The review and consideration of the additional information in no way changes any finding in terms of potential effects on Lake Mead National Recreation Area associated with the Proposed Action.

The FAA recognizes that the guidelines for land use compatibility prescribed in FAR Part 150 may not adequately address noise in a national park "where other noise is very low and a quiet setting is a generally recognized purpose and attribute." FAA Order 1050.1E, App. A, § 6.2i. Analysis

presented in the EA did not rely on the FAR Part 150 guidelines but instead, recognizing that several areas within Lake Mead National Recreation Area currently experience overflights by Grand Canyon helicopter air tours, focused on the difference in noise exposure between the Proposed Action and No Action alternative. According to Figure 19 on page 20 of the above-referenced document, "Baseline Ambient Sound Levels in Lake Mead National Recreation Area", the different locations that would likely receive overflights as a result of the Proposed Action are in areas that have the same acoustic zone designations as established by the National Park Service as those currently receiving overflights. No areas of higher sensitivity to noise exposure would be overflowed under the Proposed Action than currently or would continue to receive overflights under the No Action alternative. Based principally on predicted noise values at representative grid points, the fact that only the location of overflights with the Park and not the number of overflights is predicted to change under the Proposed Action, and comparable acoustics zones are being overflowed under both the Proposed Action and the No Action alternative, the Final EA states at Section 4.6.2.3, the Proposed Action would not substantially impair Lake Mead National Recreation Area or any other resource protected under Section 4(f).

It is the FAA's responsibility under DOT Act Section 4(f) is to determine whether the Proposed Action would "use" a resource protected under Section 4(f). The concurrence of the National Park Service with the FAA's determination is not required. It was recognized in the Draft EA that the Lake Mead National Recreation Area is a resource covered by Section 4(f). As explained further in response to additional comments from this commenter, the analysis conducted for the Final EA establishes that the Proposed Action would not have a significant noise impact or use this resource.

Response to Comment Z-8

Noise measurements/acoustic monitoring was conducted in support of the Draft EA at ten locations within the defined Study Area in 2004. As described below, some of those sites are representative of acoustic conditions within the Lake Mead National Recreation Area. The noise monitoring program is described in Section 3.5.2 and Appendix D of the Final EA.

Notwithstanding the discussion regarding the adequacy of noise monitoring and the noise analysis in the Draft EA, and in response to this and related comments from this commentor, ambient noise level measurements conducted by the FAA for an un-related project, as reported in "Baseline Ambient Sound Levels in Lake Mead National Recreation Area" (DOT-VNTSC-FAA-06-13), April 2006, were evaluated and incorporated as appropriate into the Final EA. Specifically, ambient noise monitoring data from two sites (L05 and L07) located near existing or proposed helicopter flight routes within the Lake Mead National Recreation Area have been added to Tables III-2, IV-1 and D-5 of the Final EA to provide additional supporting information on existing ambient noise levels within the park. The referenced FAA noise monitoring sites have also been noted on Exhibits III-5 and IV-5 of the Final EA. The review and consideration of the additional information in no way changes any finding in terms of potential effects on Lake Mead National Recreation Area associated with the Proposed Action.

Noise monitor Sites R1 and R2 were located beneath the existing Charleston and Tropicana corridors, respectively. Noise level data collected at those sites are representative of the noise generated by helicopter overflights at locations along existing or potential corridors since helicopters maintain a relatively constant altitude above terrain along the corridors. Grid Point G2 was located along the shore of Lake Mead within the Lake Mead National Recreation Area beneath the existing Tropicana flight corridor. As shown in Table IV-1 of the Final EA, helicopter noise exposure would

be expected to decrease under the Proposed Action at that location. The Rendezvous Point is currently overflown by inbound and outbound Grand Canyon helicopter air tour flights. The same levels of overflights of the Rendezvous Point would occur under the Proposed Action and No Action alternatives.

In response to this and related comments from this commentor, helicopter DNL values were also calculated for FAA Sites L05 and L07 within the park. FAA Site L05 is located near the proposed Jean/McCullough flight route between the proposed heliport and the Rendezvous Point in the Black Canyon Wilderness Area and FAA Site L07 is located beneath the existing Charleston corridor between the Rendezvous Point and Lake Mead shoreline. Calculated helicopter noise levels have been added to Tables IV-1 and D-5 of the Final EA for those sites to provide additional information on the potential noise impacts of the Proposed Action and No Action alternatives within the park. Tables IV-1 and D-5 of the Final EA show that helicopter noise levels at FAA Site L05 would be in the range of 36-42 dB DNL, depending upon assumed helicopter altitude, for the year 2017 with the Proposed Action. Helicopter noise exposure at FAA Site L07 would be expected to decrease with the Proposed Action since there would be fewer helicopter operations on the existing Charleston corridor. The review and consideration of the additional information in no way changes any finding in terms of potential effects on Lake Mead National Recreation Area associated with the Proposed Action.

Response to Comment Z-9

The FAA has adopted DNL as the primary measure for conducting noise analysis and may also rely on DNL measurements in making determinations under the DOT Section 4(f). Supplemental noise metrics may be employed to the extent that they are necessary for the FAA to make such a determination. Supplemental noise metrics, including the Maximum A-weighted Sound Level ($L_{\max}$), Equivalent Energy Sound Level (L_{eq}) and Sound Exposure Level (SEL) were used to provide additional information concerning existing ambient noise levels and single event noise exposure resulting from helicopter overflights at a range of altitudes and distances from potential noise-sensitive receptors. Refer to Appendix D of the Final EA for a more detailed discussion of the use of supplementary noise metrics.

The FAA recognizes that the guidelines for land use compatibility prescribed in FAR Part 150 may not adequately address noise in a national park "where other noise is very low and a quiet setting is a generally recognized purpose and attribute." FAA Order 1050.1E, App. A, § 6.2i. Analysis presented in the Final EA did not rely on the FAR Part 150 guidelines but instead, recognizing that several areas within Lake Mead National Recreation Area currently experience overflights by Grand Canyon helicopter air tours, focused on the difference in noise exposure between the Proposed Action and No Action alternative. According to Figure 19 on page 20 of the above-referenced document, "Baseline Ambient Sound Levels in Lake Mead National Recreation Area", the different locations that would likely receive overflights as a result of the Proposed Action are in areas that have the same acoustic zone designations as established by the National Park Service as those currently receiving overflights. No areas of higher sensitivity to noise exposure would be overflown under the Proposed Action than currently or would continue to receive overflights under the No Action alternative. Based principally on predicted noise values at representative grid points, the fact that only the location of overflights with the Park and not the number of overflights is predicted to change under the Proposed Action, and comparable acoustics zones are being overflown under both the Proposed Action and the No Action alternative, the Final EA states at Section 4.6.2.3, the

Proposed Action would not substantially impair Lake Mead National Recreation Area or any other resource protected under Section 4(f).

There is no compelling basis for FAA to use the additional supplemental noise metrics proposed in this comment to make its determination under DOT Act Section 4(f). The NPS has not established that areas likely to experience overflights currently are free of aircraft or man-made noise and/or that these specific areas are managed under the Lake Mead National Recreation Area General Management Plan so as to preserve their quiet setting, or are designated to be within a different acoustic zone than those currently receiving overflights of helicopter air tours. The FAA ambient noise measurement data from Site L05 reveals that the area currently experiences noise from a variety of man-made sources. Further, NPS policies permit use of motorized boats within the Black Canyon Wilderness Area for considerable periods of time. In designating the Black Canyon Wilderness Area in Public Law 107-282, Congress specifically recognized, at Section 204, "the fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area designated under this title shall not preclude the conduct of those activities or uses outside the boundary of the wilderness areas.

With regard to the version of the INM used for the noise analysis of the Final EA, Version 7.0 was used as directed by FAA so that helicopter noise levels could be modeled using the most current version of the INM. Version 7.0 of the INM contains all of the features of Version 6.2, along with the added helicopter noise information described in the previous sentence, as well as other additional features. Version 6.2 of the INM does not support helicopter noise modeling without the input of user-defined helicopter noise level and performance data. Version 7.0 of the INM was used to provide a consistent approach to noise modeling for existing or proposed helicopter operations under the No Action and Proposed Action alternatives. Modeling of fixed wing aircraft operations was not required for the Final EA, because the project would not affect fixed wing aircraft operations at McCarran International Airport. Additionally, helicopter operations at McCarran have a minimal effect on the location and extent of DNL contours around the Airport. For those reasons, DNL contours representing total aircraft operations at McCarran included in the Final EA were taken directly from noise exposure maps developed for the recently completed FAR Part 150 Update. Such maps were developed using Version 6.1 of the INM, the current version of the INM at the time the maps were prepared.

Response to Comment Z-10

See Exhibit III-5 of the Final EA with particular reference to Ambient Noise Monitoring Sites R1 and R2. Site R1 was located approximately $\frac{3}{4}$ mile northwest of North Shore Road near the western boundary of the Lake Mead National Recreation Area. Traffic on North Shore Road was not audible from the site, which was located in the bottom of a dry wash with surrounding terrain features that effectively interrupted line-of-sight view of the roadway. Audible sources of noise at Site R1 included fixed-wing aircraft associated with McCarran International Airport operations, air tour helicopters returning from the Grand Canyon on the existing Charleston corridor and wind in the surrounding vegetation. Site R2 was located approximately $\frac{1}{4}$ mile southeast of East Lake Mead Parkway. Audible sources of noise at that location included roadway traffic, fixed-wing aircraft associated with McCarran International Airport operations and outbound Grand Canyon air tour helicopters on the existing Tropicana corridor. Therefore, Ambient Noise Monitoring Sites R1 and R2 are representative of helicopter noise exposure along the Tropicana and Charleston flight corridors. The fact that a different government entity is responsible for managing the land at sites R1

and R2 does not affect the propagation of helicopter noise as it may affect locations beneath or near helicopter flight routes.

The FAA has adopted DNL as the primary measure for conducting noise analysis and may also rely on DNL measurements in making determinations under the DOT Section 4(f). Supplemental noise metrics may be employed to the extent that they are necessary for the FAA to make such a determination. Supplemental noise metrics, including the Maximum A-weighted Sound Level ($L_{\max}$), Equivalent Energy Sound Level (L_{eq}) and Sound Exposure Level (SEL) were used to provide additional information concerning existing ambient noise levels and single event noise exposure resulting from helicopter overflights at a range of altitudes and distances from potential noise-sensitive receptors. Refer to Appendix D of the Final EA for a more detailed discussion of the use of supplementary noise metrics.

In making its determination under DOT Act Section 4(f), the FAA must consider whether the Proposed Action would substantially impair the resource, "Substantial impairment occurs only when the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished." (FAA Order 1050.1E, App. A, § 6.2f). This determination does require consideration of the effect of the predicted noise exposure on the purposes for which the underlying land is managed and used. As stated earlier, according to Figure 19 on page 20 of the above-referenced document, *Baseline Ambient Sound Levels in Lake Mead National Recreation Area*, the different locations that would likely receive overflights as a result of the Proposed Action are in areas that have the same acoustic zone designations as established by the National Park Service as those currently receiving overflights. No areas of higher sensitivity to noise exposure would be overflowed under the Proposed Action than currently or would continue to receive overflights under the No Action alternative.

Response to Comment Z-11

Noise exposure due to helicopter overflights along existing and potential flight corridors has been described in terms of the DNL, $L_{\max}$ and SEL noise metrics (see sections D.5 and D.6 of Appendix D of the Final EA). Although the analysis of noise exposure along existing or potential flight corridors refers to specific points of interest (grid points) along the corridors, the noise exposure information reported in the Final EA is applicable to any location along the corridors. For this reason, depiction of spatial boundaries would not contribute to the noise impacts analysis.

Response to Comment Z-12

Section 4.10.3 of the Final EA identifies the Black Mountains as desert bighorn sheep habitat. As noted in the Final EA, due to helicopter fuel capacity limitations, time demands, and operating costs, Grand Canyon helicopter air tours typically follow direct routes with limited *ad hoc* deviations (e.g., hovering or circling activities are not likely to occur) to other points of interest. Helicopter air tour operators do not routinely hover over wildlife, a practice that is not anticipated to change under the Proposed Action, and the duration of any disturbance to wildlife therefore is and will remain brief.

Response to Comment Z-13

The rationale for the minimum 1,500 feet vertical distance is based on existing research and literature, as discussed and cited in Section 4.10.2.3 of the Final EA. Citations were provided in full in Chapter V of the Final EA.

As discussed in Section 4.10.2.3 of the Final EA, the minimum vertical distances at which helicopters might be flown cannot be enforced through the process of, or as a result of, this Final EA. Further, regulations do not provide a noise threshold against which potential impacts on animals can be evaluated.

The CCDOA will collaborate with the Grand Canyon air tour operators, the FAA, and the National Park Service to address concerns regarding potential flight corridors and to encourage the helicopter air tour operators to avoid overflying noise-sensitive resources identified in Lake Mead National Recreation Area.

Response to Comment Z-14

Consistent with FAA guidance, the Section 4.17 of the Final EA included an examination of visual impacts related principally to the construction and presence of the proposed Heliport at the South of Sloan site. "The visual site of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact." FAA Order 1050.1E, App. A, § 12.2b.

Further, evaluating the potential for visitors to Lake Mead National Recreation Area to see helicopters is not required for the FAA to make its determination under DOT Act, Section 4(f). This determination is predicated principally on whether the noise impacts of the Proposed Action would substantially impair the resource. NPS did not provide any information on particular vistas within the park or provide any support for the proposition that the mere presence of helicopters, independent of their noise emissions, could be found to substantially impair the resource.

Response to Comment Z-15

While some helicopter air tours that originate and conclude at McCarran International Airport (and would originate or conclude at the proposed Heliport at the South of Sloan site) enter airspace subject to the Special Federal Aviation Regulation No. 50-2, Special Flights Rules in the Vicinity of the Grand Canyon National Park, AZ, the alternatives examined in this Final EA would be equally subject to and would equally affect and be affected by SFAR No. 50-2, which is administered by the FAA and National Park Service. Footnote 2 on Page I-1 in the Final EA clarifies this point.

The number of Grand Canyon helicopter air tours is anticipated to be the same under any of the alternatives examined in the Final EA, and only the origination location in the Las Vegas area and the corridors between the origination location(s) and the Rendezvous Point would be different. There would be no difference in Grand Canyon helicopter air tour activity between the Rendezvous Point, identified on Exhibit II-3 of the Final EA, and the vicinity of the Grand Canyon National Park. As shown on **Exhibit L-1** of the Final EA, the Rendezvous Point is more than 30 nautical miles from the nearest boundary of the SFRA. There would be no difference in the effects from the Grand Canyon helicopter air tour operations considered in this Final EA under any of the alternatives and therefore no need to consider cumulative effects in terms of the *EIS for Special Flight Rules Area In the Vicinity of the Grand Canyon National Park*.

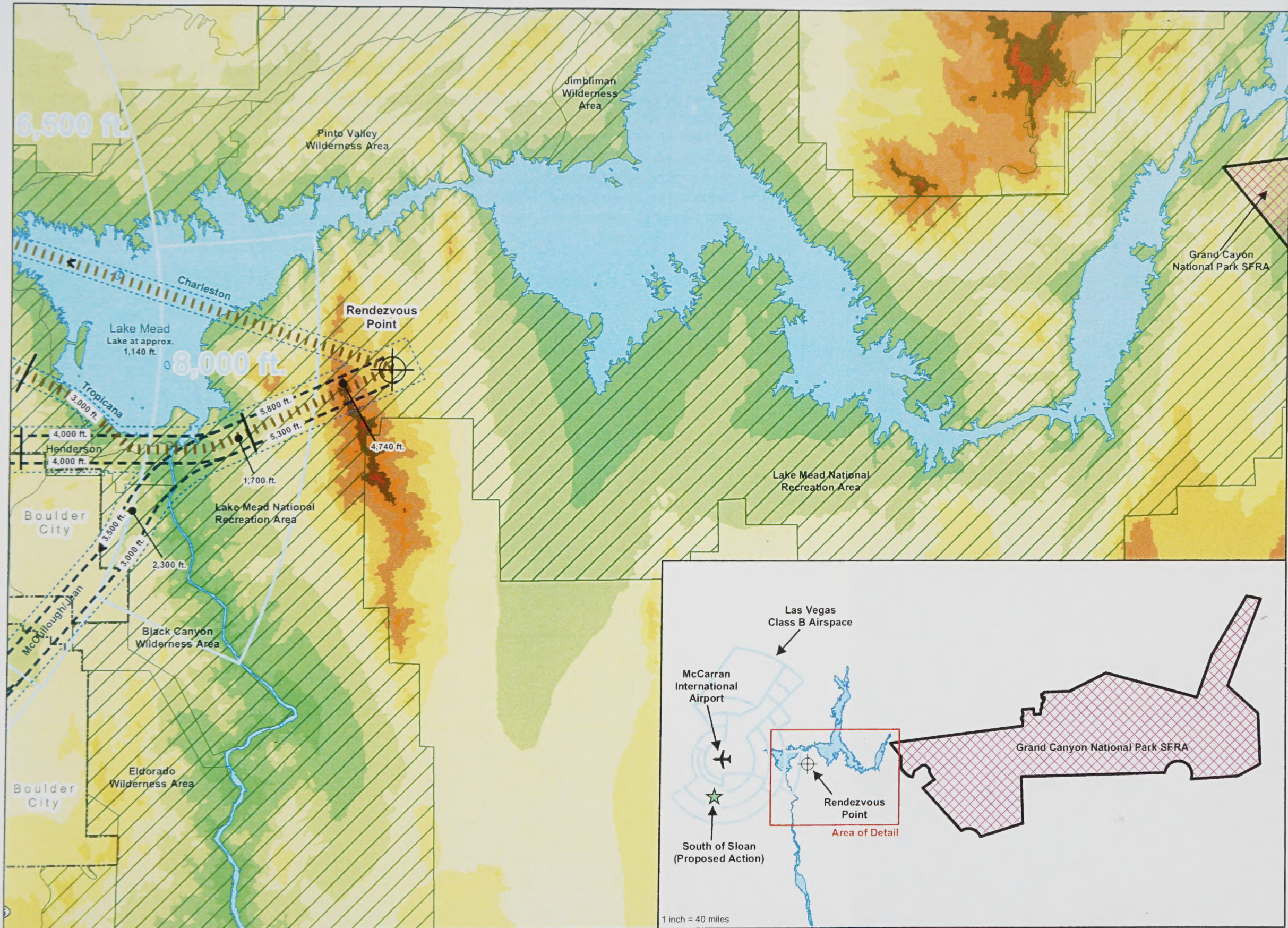
The CCDOA respectfully disagrees with the commenter regarding the adequacy of the noise portion of the cumulative effects assessment. The cumulative effects assessment was developed in accordance with FAA Order 5050.4B and CEQ regulations and guidance. CEQ publications that were reviewed during the preparation of the cumulative effects assessment included *CEQ Guidance: Consideration of Past Effects in Cumulative Effects Analysis* (June 2005) and *Considering Effects*

Under the National Environmental Policy Act (January 1997). The Final EA includes a comprehensive cumulative effects assessment in Section 4.22. The scope of the cumulative effects assessment, which varies by resource, includes consideration of past, present, and reasonably foreseeable future actions undertaken by the CCDOA, individuals, and other agencies.

Response to Comment Z-16

Exhibit II-3 of the Final EA presents potential flight corridors under the Proposed Action based on consultation with the helicopter operators, the FAA, and other stakeholders. While Public Law 109-115, Section 180 mandates a specific corridor above the Sloan Canyon NCA, outside the Sloan Canyon NCA the flight corridors are more illustrative. The potential flight corridors presented on Exhibit II-3 of the Final EA were used to assess potential impacts associated with the Proposed Action; the actual flight corridors used by the helicopter operators may vary. The Proposed Action does not include the establishment or implementation of any corridors to be used by helicopter operators.

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Legend

- ★ Proposed heliport site
- Boundary of Class B airspace
- 5,000 ft. Helicopter flight corridor segment
- 5,000 ft. Approximate altitude at which helicopter would traverse corridor segment if flying level
- 3,200 ft. Approximate elevation of critical terrain or obstruction

Helicopter flight corridors

- McCarran International Airport existing flight corridor to or from the Grand Canyon
- Potential flight corridor to and/or from the Grand Canyon
- Corridor boundary
- Direction of traffic

Terrain elevation (feet above mean sea level)

- | | |
|-----------------------|-----------------------|
| 0 ft. - 499 ft. | 3,000 ft. - 3,499 ft. |
| 500 ft. - 999 ft. | 3,500 ft. - 3,999 ft. |
| 1,000 ft. - 1,499 ft. | 4,000 ft. - 4,499 ft. |
| 1,500 ft. - 1,999 ft. | 4,500 ft. - 4,999 ft. |
| 2,000 ft. - 2,499 ft. | 5,000 ft. - 5,499 ft. |
| 2,500 ft. - 2,999 ft. | |

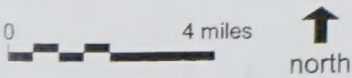
Other features

- Primary road
- Secondary/State road
- Railroad
- Jurisdictional boundary
- National Conservation Area, Wilderness Area, Natural Area, or National Recreation Area
- Grand Canyon National Park Special Flight Rules Area (SFRA)

Flight Corridor Identification

Charleston	Existing arrival flight corridor along Charleston Boulevard
Tropicana	Existing departure flight corridor along Tropicana Avenue
Henderson	South of Sloan potential flight corridor #1
McCullough	South of Sloan potential flight corridor #2
Jean	South of Sloan potential flight corridor #3

Sources: Clark County Department of Aviation; ASRC Aerospace Corporation; Ricondo & Associates, Inc., January 2006; Las Vegas Sectional Aeronautical Chart, November 2003; Lake Mead NRA News Release, August 19, 2005.
Prepared by: Ricondo & Associates, Inc., August 2008.



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L.4.3 Comments Received at the Public Hearing

The Public Hearing transcript (including a copy of the presentation given by the CCDOA to the members of the Board of County Commissioners) is provided in the following pages. (The transcript has been printed on blue paper; however, the presentation has been printed on white paper for ease of reading.) As noted in the transcript, a total of four (4) individuals provided testimony before the Board of County Commissioners at the Public Hearing. Similar to the comments received in correspondence containing comments requiring responses, individual comments in the Public Hearing transcript have been bracketed and assigned an individual comment number. However, no responses to comments are required.

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Public Hearing for the Proposed Southern Nevada Regional Heliport, Draft Environmental Assessment

May 6, 2008

Clark County Board of Commissioner's Meeting

Randall H. Walker, Director of Aviation

Jeffrey M. Jacquart, Program Administrator

Southern Nevada Regional Heliport | Public Hearing



HISTORY: 1997 - 2000

1997-1998

- Complaints from residents living along Tropicana, Charleston, and the Strip area grew as helicopter tour operations increased due to a new market demand.

2000

- A noise assessment found that although residents believed that helicopter noise was annoying, the levels were not loud enough to be deemed "significant" under federal regulations.

Southern Nevada Regional Heliport | Public Hearing



HISTORY: 2001-2002

2001-2002

- Alternative flight corridors were explored and tested, but not implemented due to:
 - Safety concerns;
 - Apprehension regarding moving noise from one community to another;
 - Additional flight time requirements.
- The Advisory Committee on Helicopter Noise (ACHN) was formed and almost immediately recommended to relocate the base of tourist helicopters. **A 160 acre site was initially sought near Railroad Pass, but abandoned after further investigation.**

Southern Nevada Regional Helipoint | Public Hearing



HISTORY: 2003-2004

2003-2004

- A *Needs Assessment* and *Site Suitability Assessment* was completed to assist in the identification and selection of a heliport site.
- Over 400 public comments were received regarding the site selection.
- One site, identified as the GoKart/Sloan site, was found to meet the requirements for a new facility.
- The Anthem Homeowners Association did not support the GoKart/Sloan site.

Southern Nevada Regional Helipoint | Public Hearing



HISTORY: 2004-2005

2004

- The Board designated the preferred heliport site to be located 2 to 5 miles south of the Interstate 15 and Sloan interchange (now known as the South of Sloan site).
- The environmental review process was immediately initiated.

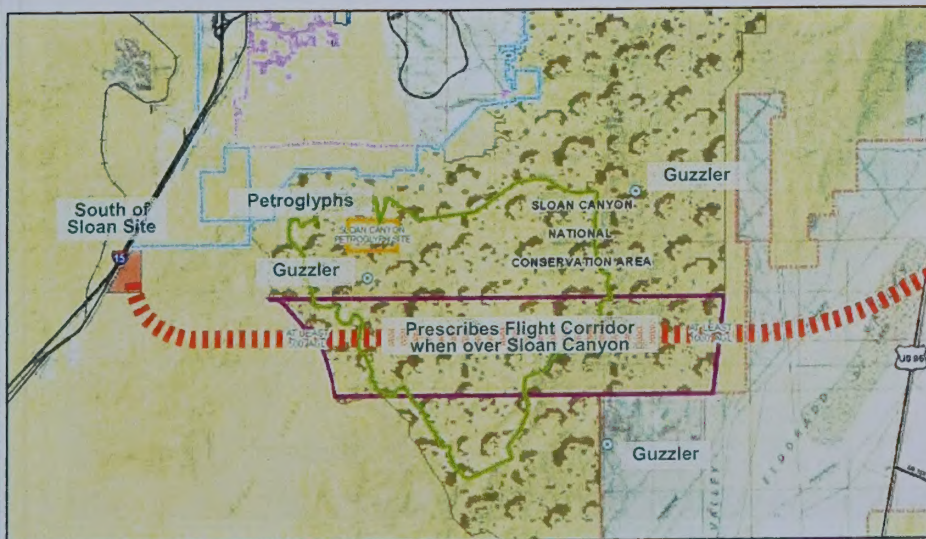
2005

- Congress authorized the transfer of the South of Sloan site from the BLM.
- The legislation prescribed a flight corridor over the Sloan Canyon National Conservation Area.

Southern Nevada Regional Heliport | Public Hearing



HISTORY: FLIGHT CORRIDOR



Southern Nevada Regional Heliport | Public Hearing

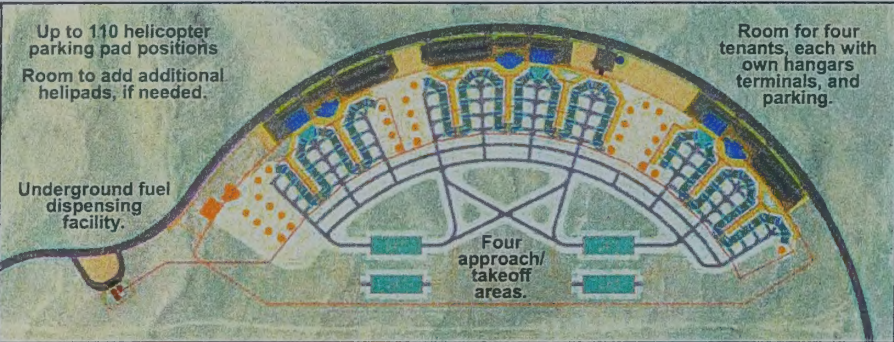


HISTORY: INITIAL CONCEPT



2006-2007

- A Conceptual Heliport Layout Plan was completed, providing a first look at what could be the world's largest public use heliport.



Up to 110 helicopter parking pad positions
Room to add additional helipads, if needed.

Room for four tenants, each with own hangars, terminals, and parking.

Underground fuel dispensing facility.

Four approach/takeoff areas.

Southern Nevada Regional Heliport | Public Hearing



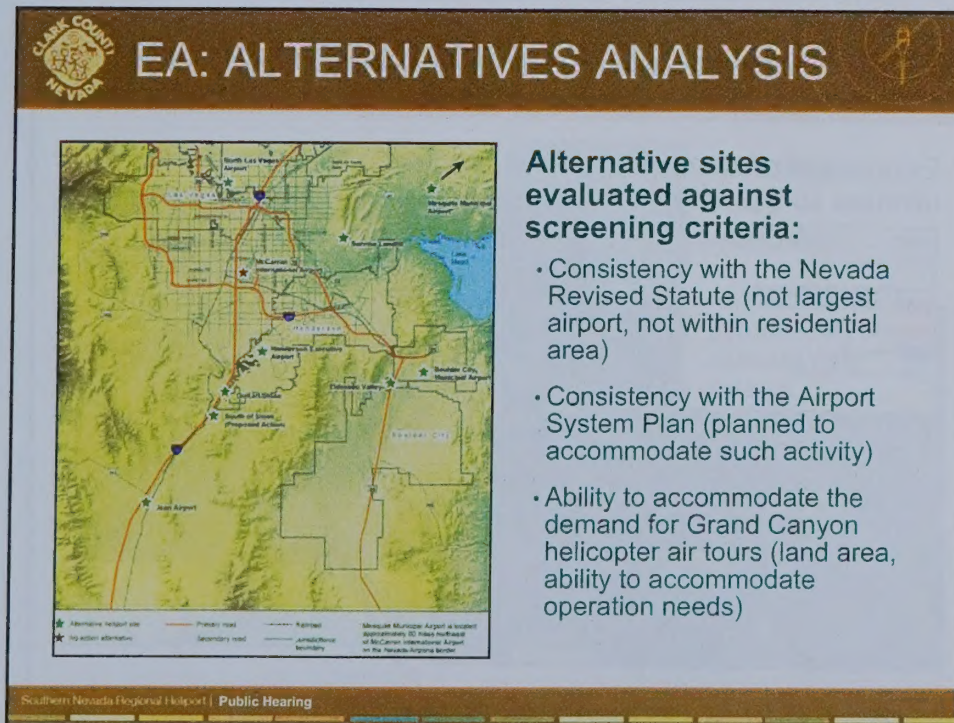
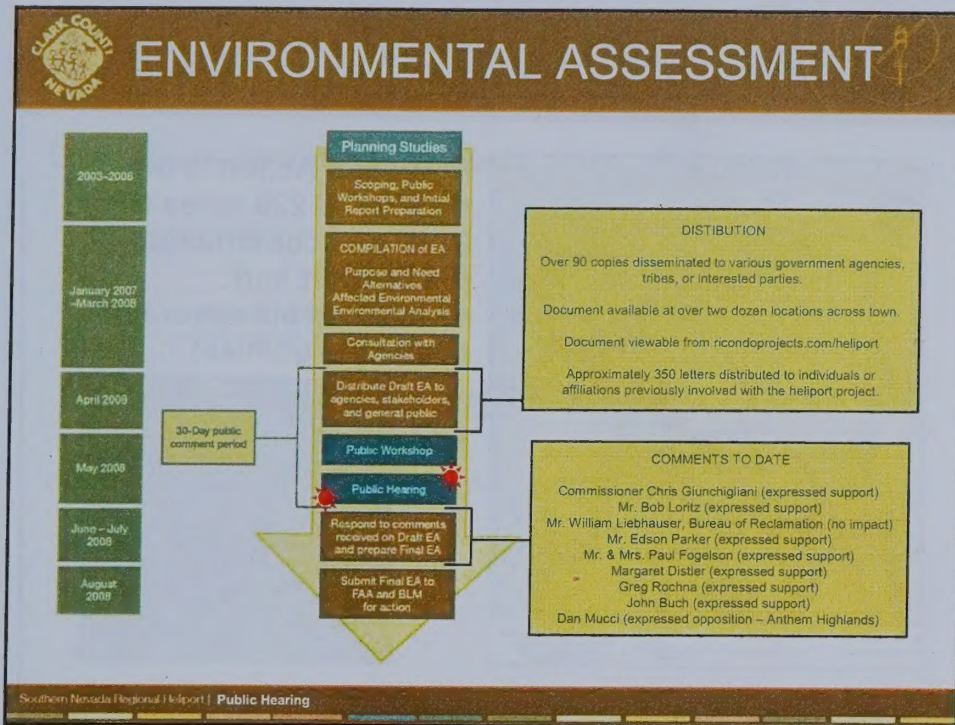
HISTORY: CONCEPT MODEL

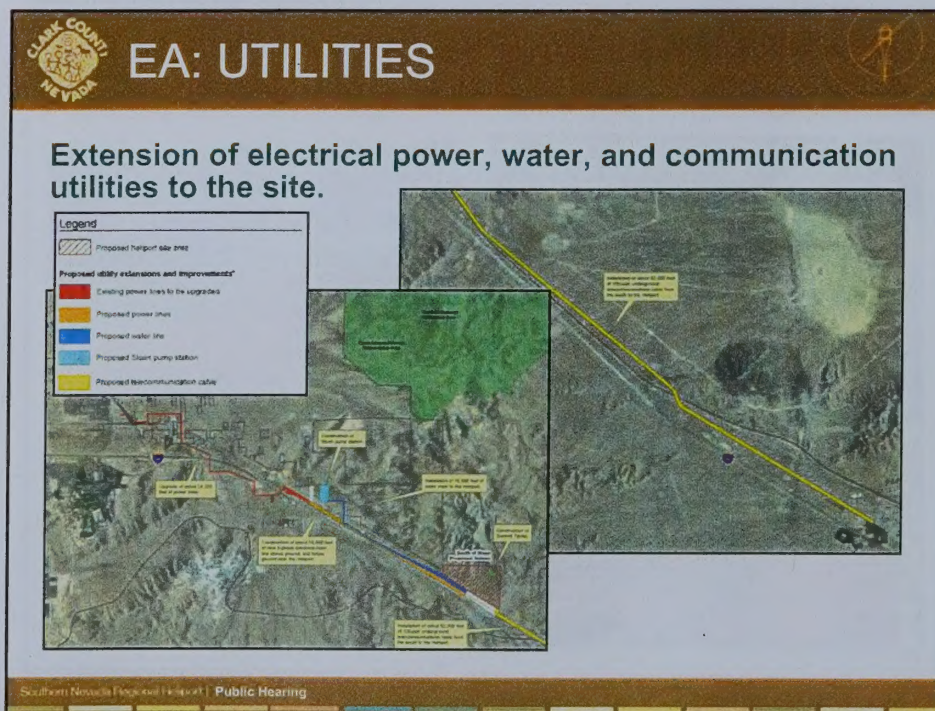
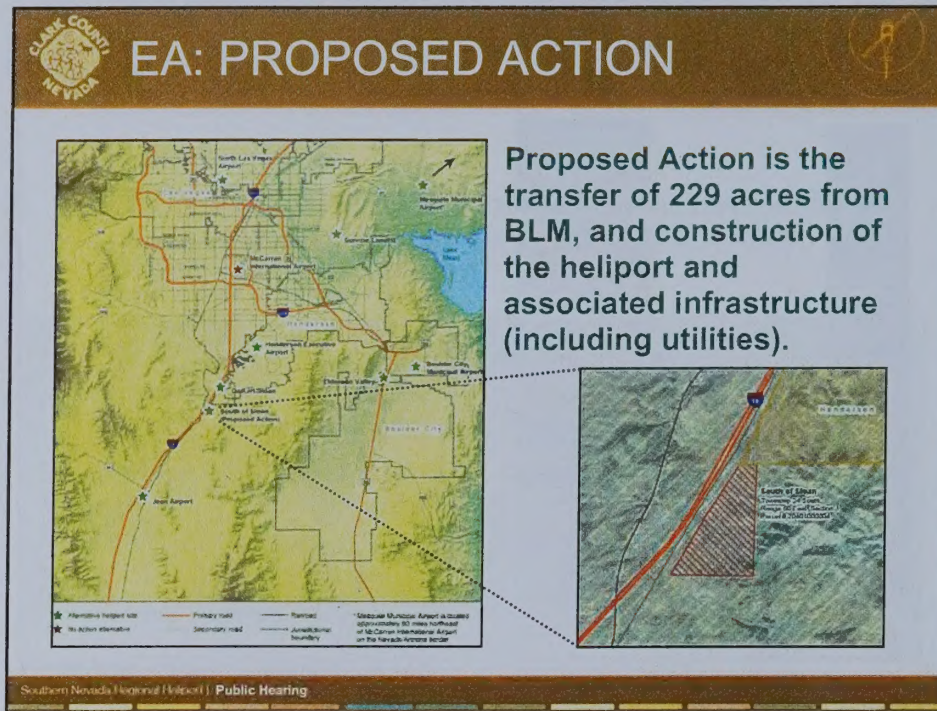




Note: Four final approach and takeoff (FATO) areas will be constructed.

Southern Nevada Regional Heliport | Public Hearing





CLARK COUNTY NEVADA

EA: RESOURCE CATEGORIES

Over 20 environmental resource categories assessed:

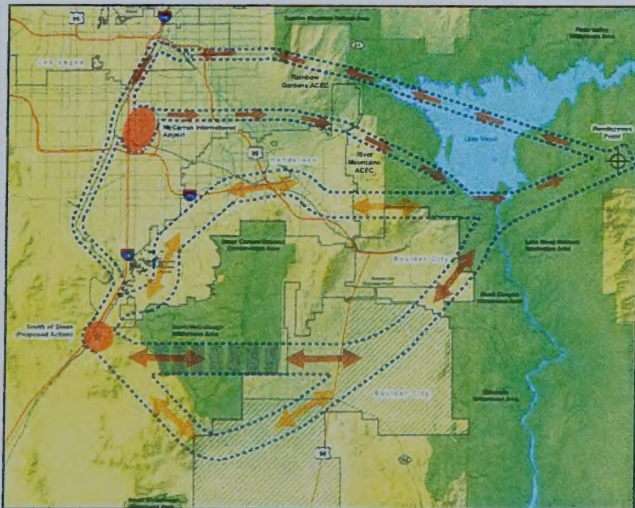
- Noise
- Compatible land use
- Socioeconomic impacts, environmental justice, and children's environmental health and safety risks
- Air quality
- Areas of Critical Environmental Concern (ACEC)
- Department of Transportation Section 4(f) lands
- Historic, architectural, archaeological, and cultural resources
- Native American religious concerns
- Wilderness
- Fish, wildlife, and plants
- Federally-listed threatened or endangered species
- Invasive, nonnative species
- Floodplains and floodways
- Water quality
- Hazardous materials, pollution prevention, and solid waste
- Light emissions
- Visual resources
- Natural resources and energy supply
- Secondary (indirect) impacts
- Construction impacts
- Consistency with plans, goals, and policies
- Cumulative impacts

NO SIGNIFICANT IMPACTS.

Southern Nevada Regional Heliport | Public Hearing

CLARK COUNTY NEVADA

EA: NOISE & OVERFLIGHTS



Overflight Area includes:

- One-mile radius around Heliport site and west side of McCarran;
- Existing Grand Canyon tour corridors;
- Potential flight corridors.

Southern Nevada Regional Heliport | Public Hearing



NEXT STEPS



Where do we go from here?

- Respond to comments in the Final EA, and forward to the FAA and the BLM for action. (By late June 2008)
- If FAA issues a Finding of No Significant Impact (FONSI)/Record of Decision (ROD), request land transfer from BLM. (By late 2008)
- Design site and utilities to site. (Through early 2009)
 - Includes agreements with various agencies.
- Construct utilities to site. (Through 2010)
 - Water the biggest hurdle.
- Construct heliport. (Through 2010)

Southern Nevada Regional Heliport | Public Hearing



Questions

Southern Nevada Regional Heliport | Public Hearing

Board of County Commissioner's Meeting - May 6, 2008

ITEM 139: Conduct a public hearing on the draft and environmental assessment for a Southern Nevada Regional Heliport.

Rory Reid: Does the Department of Aviation have anything to tell us? How are the Cinnabuns this morning, Mr. Walker?

Randy Walker: I never have any. Those are for Commissioner Collins. He gets testy when we don't bring them. We only bring them once a month. He reminds me when we don't have them.

Mr. Chairman, Members of the Board. This public hearing is to talk about the environmental assessment we're doing for a regional heliport which is a strategy that we have been working on for quite awhile on some of the noise issues dealing with helicopters. To give you a little history of how we got here: Back in 1997-98 we started getting increased complaints from residents living along Tropicana and Charleston, which are the principal routes that the Grand Canyon tour operators take. Before this time there weren't really very many trips to the Grand Canyon, probably maybe five to ten a day and as the market place here changed, with the more affluent customer, we saw more and more people taking the opportunity to go to the Grand Canyon by helicopter and so we had more flights hence more noise complaints from the residents. In 2000, a noise assessment found that although the residents believe helicopter noise was annoying; the levels were not loud enough to be deemed significant under the federal guidelines. We do have federal guidelines that define what noisy is by the federal standard and the studies did not show that the noise resulting from these helicopters met that standard. In the 2001-2002 time frame, we looked at alternative flight corridors, explored and tested some but were not implemented for a number of reasons, safety concerns for some, apprehension regarding moving noise from one community to another, that really didn't accomplish much, and the additional flight time requirements would be opposed by the operators because that would increase their costs. So, we had the advisory committee on helicopter noise was formed and almost immediately recommended to relocate the helicopters to a new base of operations, which would be what they called a non-urban heliport outside of the area where we have a lot of residential. At first we looked at the 160 acre site at Railroad Pass but that site was abandoned after investigation for a number of reasons. In 2003 and 2004, there was a need assessment and site suitability assessment was completed to assist in the identification and selection of a heliport site. We had over 400 public comments, which we received regarding the site selection and we picked a site, initially identified as the GoKart/Sloan site, which was found to meet the requirements of the new facility. The Anthem

Homeowners Association did not support the GoKart/Sloan site, as some of you recall we had a large meeting in the Anthem area, and as a result of that in 2004, the Board designated the preferred site to be located 2 to 5 miles south of Interstate 15 at the Sloan interchange known as the South of Sloan site and the environmental process for this selection was immediately initiated. In 2005, Congress authorized the transfer of the South of Sloan site from the BLM to the county for this purpose and legislation also prescribed a flight corridor over the Sloan Canyon National Conservation Area for Grand Canyon tours operations that would occur from that particular site. This shows you the site, itself, which you can see aligned with I-15 and then you can see the corridor which is established in the Federal Legislation. It requires any helicopter operator going to the Grand Canyon from this site to fly from this site they must be safety permitted, they must be 500 feet above the ground when they enter this corridor and 1,000 feet above the ground when they exit. You can see the South of Sloan site, the prescribed flight corridor and this is where the petroglyphs are, which is a very big concern for a lot of people and you can see the flight corridor avoids the petroglyphs and also avoids the guzzlers, which have been put up in this mountain range for the benefit of the bighorn sheep.

In 2006 – 2007 a conceptual heliport layout was completed providing a first look at what would be the world's largest public use heliport. This shows you a pictorial depiction of what the heliport site would look like. Initially, it would have up to 110 helipads for operations. We also have the ability to expand that in the future, if needed. It would also be able to put in an underground fueling system, which would make the fueling of the helicopter safer and much more operationally efficient for the helicopter operators themselves. And we would have four different approach and take-off areas, which would make the operation of the helicopters very safe in this area. This is a model that was built that shows how the heliport could fit into the area. You can see there's some mountainous terrain to the east which makes it a little difficult but we have been able to site this in such a way that the helicopters could safely take off and then reach the corridor that they need to reach to get to the Grand Canyon under the legislation.

I'll turn this over to Jeff Jacquart to talk to you a little about the specifics of the environmental assessment.

Jeff Jacquart:

Real quick I will give you a quick summary of what we completed to finalize the draft environmental assessment. We opened up the public comment in early April. We close this Friday unless we opt to extend it. To try to get the word out to the impact of the community and a variety of government agencies we sent out 90 copies to various agencies and interest groups, providing them a hard copy or CD so we can get some feedback from their areas of interest. We provided a document to over two different libraries and other community buildings across the Las

Vegas Valley. It has been available online at our project website. And we kept or maintained an interested party notification list so we sent out about 350 informational letters. Most are the average citizens who are concerned about the existing routes that keep them aware that the county is still pursuing this non-urban heliport facility.

Here we are today at the public hearing. We hosted a workshop last week. We had about a dozen residents show up for that workshop and we received less than 10 comments to date. For the record, the first comment we received was a comment in support from Commissioner Chris Giunchigliani and most of the comments to date have been in support. The last comment we received close of business on Friday was from a resident in the Anthem Highlands area that is concerned about potential impacts with these of the South of Sloan site and potential over flights in the Anthem community. There are a number of alternatives that are initially looked at in the environmental document and there was a set of screening criteria that we looked at to see what site would be the most suitable for the development of a non-urban heliport specifically focusing on the Grand Canyon tour operations. We wanted to make sure it was consistent with State Law, it wasn't the largest airport within the valley, McCarran Airport, it was not closely located to existing residential areas, it is consistent with the airport system plan, currently, none of our airports that Clark County owns and operates has a large area set aside for helicopter operations, and would this new site be able to accommodate the demand that exists today and in the future for the Grand Canyon tour industry?

And one site popped out as the proposed site, this is the South of Sloan site that Randy referred to. It is an approximately 229 acre site. It is 2.5 to 3 miles south of the Sloan Interchange. This environmental document would allow not only the development of that site but we also had to account for utility expansion down to the site as well. We're looking at, I know it is hard to see on the screen but your hard copy should identify some of the existing utilities, are very costly to expand down to the site. About four miles of power line would have to be improved. Another two to three miles of underground power extended to the site and two to three miles of new water line, we would have to bring up communication line/phone line from Jean, over ten miles to service the new site as well. There are over twenty environmental resource categories that are actually assessed in the documents. The good news is none of those categories were found to have a significant impact on the environment. But you'll note that there are four areas or four categories that are highlighted in different colors; a brownish-orange color. These focus primarily on noise and overflights of environmental sensitive lands. So I thought I would give you a real quick summary of what we found in the document with that. This shows the number of flights or potential corridors from the existing facility at McCarran and the proposed action – the South of Sloan site. The overflight area includes a one-mile radius around McCarran or

the proposed site, the existing routes that are flown, and the potential corridor from South of Sloan site. When we looked at the one-mile corridor around the site there is no significant impact on known residential uses at McCarran or the South of Sloan site so that is good news for the environmental document. If you recall, as Randy indicated, in 2000, we completed a noise assessment along the existing corridor and although there are no significant impacts for federal standards there are about 100,000 people that live within about a one-third mile of the existing corridor so that's why the county is pursuing this non-urban heliport. The likely route that will be flown out of the South of Sloan site, as Randy indicated through the legislation, would be through the Sloan Canyon National Conservation area. The document did look at potential overflights and the impacts on the environment but again it does not exceed any threshold that the federal government has established for the environment through that area. Because the county cannot control where the helicopters are flying once they leave the site, we also looked at some other potential routes that they may have to use but likely will not use because of increased flight time or conflicts with fixed-wing aircraft at the Henderson Executive Airport or McCarran International Airport so although the County cannot guarantee they will utilize preferred flight path, I know there are a couple of operators here today, it is highly unlikely that they will look at or operate on the other two corridors that we assessed in the environmental document. So where do we go from here? Once the public hearing is held today and we receive some comment from the community today and we close the public comment this Friday, we will respond officially to all those comments and finalize the draft environmental assessment and forward it to the Federal Aviation Administration and the BLM for action. We are hoping that by the end of June that a finding of no significant impact and a record of decision will be issued and then we can officially request for the land from the BLM; that transfer hopefully will occur by the end of this year. We are currently at risk doing site design and utilities to the site. On your morning agenda the Water District just authorized an agreement with us for the Sloan Pumping Station. The design actually will occur all the way through 2009. As I just mentioned there are a number of agreements with a number of utility providers for the sites. We will also construct the utility to the site and the site itself through 2010, with the water being the biggest hurdle to overcome; getting water to the site and opening by the end of 2010 is going to be our biggest concern. We're doing everything we can. We are having really good cooperation with the Water Authority but there's a lot to be done to get this operational by the end of 2010. And as I mentioned hopefully the facility will be open by the end of 2010. I would be more than happy to answer any questions or wait for questions after public comment is heard from the community.

Rory Reid:

Commissioner Woodbury.

- Bruce Woodbury: Thank you Mr. Chairman.
Entering into the lease agreements with helicopter companies, is it not possible to condition those leases on adherence to the established flight path?
- Randy Walker: No. Under our federal regulations with the FAA, we cannot regulate the flight by our agreements on the airport, that would be a violation of our grant assurances and federal law. Where aircraft fly, —are the purview of the federal government all we can do is provide facilities for them to do that. So yes, that would run afoul of federal regulation and federal law. We had already looked into that and our attorneys have already told us that.
- Bruce Woodbury: So the FAA will have some control over...
- Randy Walker: Once the aircraft takes off from the facility, where they fly is a federal regulatory process and as a public use facility, we cannot dictate any more than we can at McCarran where fixed-wing aircraft fly based on a lease. That would be akin to having a lease with an airline and leasing them a gate and telling them which way they can operate in and out of McCarran. Local governments do not have that authority.
- Rory Reid: Aren't we better off now, though, given the fact that the congressional act designates a route? Where as today there's no route been designated by Congress?
- Randy Walker: Yes, I think it does. Clearly if you are trying to go to the Grand Canyon, and that's the main business of these helicopter operators today, clearly that is, in my opinion, the most economical and direct route which would be, of course, the least expensive to fly so from an economic standpoint, they would be motivated to fly that route, in my opinion. The other routes take them further away, more fuel burn, more time on the helicopter and things like that.
- Rory Reid: This is a public hearing. If the Board has other questions, we can do that in a second, anyone here to speak on this item? Come forward, state your name and address.
- Anthony Hodges: 123 Sir David. This is a hot topic when they built the Stratosphere years ago and that man, Mr. whatever-his-name-was wanted to take it up 1800 feet and the FAA stepped in and told him and the city council, Jan Jones, whatever, that 1200 feet is all they were going to allow. What I am saying is if you move that helicopter pad any further south, it will be on the other

PH-1

side of Primm, it will be in California then you have to start all over again. You always have a few people going to complain about something all the time but the way it sounds, most people and everyone is on board. Don't care when you put something in the air the airways are already crowded as is. So the point is, the helicopter they have to be able to get to the canyon or they are out of business. I'm sure they are going to fly safe because nobody wants to get in no wrecks in the airspace, I'm more than sure of that. So they fly, where they are at now coming from the canyon under the present conditions. What I'm trying to say is that you may have to move the utility ten miles and all that stuff but come on, let's put the thing somewhere and not cost a fortune to do so because as you said, airspace is controlled by the FAA anyway. Once it is available, it is between them and the government anyway where airspace is concerned. What I'm trying to say, the County and the public and anyone else has only so much input and the rest is up to the FAA once its place is designated to be built and go in construction so you can have all the hearings you want, if you move it further south it would be on the other side of Primm. Thank you.

Rory Reid:

Thank you. Anyone else?

John Sullivan:

My name is John Sullivan, I am CEO of Sundance Helicopters here in Las Vegas. 5596 Haven Street, Las Vegas, Nevada and my company is in support of the project to relocate the helicopter companies, including mine to the Sloan site. We prefer to stay at McCarran Airport. We are walking distance from the large hotels, the Mandalay Bay, that's where our customers are. We prefer to stay close to our customers, but we understand the impact that our operations are having on the community, particularly the residents along Tropicana Boulevard and along Charleston Boulevard. I've been personally heavily involved in this issue for a number of years, I served on the Advisory Committee for two years and it seems like Randy Walker and his staff has worked very very hard to come up with the win-win solution. I think that finding this site, which is close enough for us to move our passengers back and forth, it allows us to access the Grand Canyon over a very remote country, where there are no residents and hopefully there will never be any residents out there in the McCullough Range where the proposed paths are. Our intent is to relocate our Grand Canyon operation down to that site as soon as possible, actually. We're in a growth mode, we would love to consolidate our operations, build a large facility down there and looking at this plan that Randy and his staff has put together is a very very impressive facility. It will put Las Vegas on the map of the world of the helicopter industry. There's nothing of this size that has ever been built for helicopter operators like ourselves. We're in support of the plan and we appreciate the hard work the Department of Aviation has done to put this together.

PH-2

Rory Reid:

Thank you. Anyone else?

Jerry Kallop: Yes, my name is Jerry Kallop. I live at 6915 Stone Meadows Avenue. This is the last subdivision on the end of East Charleston. I was a volunteer on the noise of airport noise consulting board, from 2005 to 2006 and this location out of all of the ones that were reviewed and hours and hours of time, it is an excellent location. When we started working on this in 2002, there were approximately less than 50 helicopters flights a day over my house. I think it is now approximately around 200 and I really appreciate this comment about growth because – the tourism industry is huge and the rage is the last flight coming in to see the lights of the city because it is so dynamic from about 7 to about 8, it is constantly, you know, one after another. I mean they are side-by-side sometimes. So the growth is going to continue so if you can do anything for the residents, the tens of thousands of residents who are aggravated by this noise and – and it is, we would really appreciate it. Thank you very much.

PH-3

Rory Reid: Thank you. Anyone else?

Favil West: Good Morning Commissioners. My name is Favil West. 2130 Scotts Valley Drive, Henderson, Nevada. I have got about 61 years of flying the friendly and sometimes unfriendly skies, depending on my time of life. As well as having been the retired past president of the Sun City Anthem Community Association and the head of the group that stimulated some of the discussions, with respect to the change from Sloan to the site South of Sloan. I served on the Advisory Committee for four years, two years as its Chairman. I want to compliment Randy and Jeff for their hard work. We worked mostly with Jeff during this time frame. We explored a lot of options; many of them were just dead ends because the preceding groups that had looked at this over the previous years had pretty much done a thorough job. Of course, as you know, we more or less retired the committee or at least we put it on the shelf. This location is outstanding. All of you who have worked on it have done a great job. It will be the cutting edge of heliports in the United States. We need to push this forward, not only for the residents who have been impacted by it the last 10 to 12 years but those who could be impacted by it in the future. I caution you to use every effort that you can to insure that we don't transfer this noise from two corridors to yet another corridor closer to the Anthem community, which will eventually be approximately 100,000 people out there once Inspirada really gets going. Again, my thanks to you, we are 100% in support of this site. I want to commend Commissioner Woodbury for his hard work. We had 2,406 people that came to two meetings. I think we surprised a few people who attended them. I saw a lot of heads nodding. We even surprised Senator Reid at the numbers of people that showed up. There's a lot of interest in this. We appreciate your time and your work and especially the work of CCDOA. Thank you.

PH-4

Rory Reid: Anyone else? I'll close the public hearing and turn it over to the Board.

C. Giunchigliani: Thank you. I just want to echo some of the thoughts. You were an excellent chair. I appreciate the input also, the industry was very cooperative and I know when I first started running for office, because I lived downtown, the one thing I kept hearing from constituents over and over again. And we had to try and balance between FAA, what the County could do, what the local governments could do and so I appreciate my colleagues, when I served in legislature, for supporting/creating the Advisory Committee to take a look at what would benefit the constituents, as well as making sure the industry was protected and I think you landed on a good site. I even some of the former members of the Advisory Committee to ask them to send in letters of support as well so there was some testimony from the public regarding that. But having lived off Oakey and Maryland Parkway for 20-some-odd years, sometimes during the summer it felt like mini-Beirut. You couldn't sit on your back porch. You couldn't have a conversation, same thing as North Las Vegas that still has some issues as well to deal with. I think, Jeff, you have done an excellent job. A lot of hours, I attended a lot of the hearings. This is one place, I think, where government came together. I do want to point out though we do recommend the routes as local government, FAA still sets them, correct, Randy?

Randy Walker: Yes, we could recommend routes and we have certainly done that in the past. The FAA will establish the routes. The one route going east through the McCullough Range is established by federal law. So, if you fly over the McCullough range, you have to fly that particular route. If you fly around the range then the FAA can go through its normal route selection process.

C. Giunchigliani: That's why I was following up on that based on Commissioner Woodbury -- because I always still felt that special use permits are issued for some of these businesses, therefore, we could put certain requirements on them, also as a business license, in order to do business, there's certain requirements so, hopefully, I think everybody's working together but let's just --, if there is any other teeth we could put into play to make sure that they stick to the route or routes once we put them in place then that would be helpful.

Randy Walker: Yes, I point out, of course, if someone is coming to do a private heliport and zoning issues and that is not under the regulatory process of the federal government then you probably have some options that we don't have as a public use airport.

Lawrence Weekly: Thank you very much. Just real brief. Randy, I'm sure it is not often we tell you thank you and so I just want to thank you and the committee, who

have worked really hard to have identified the site because I'm representing many of those folks in the urban core who have had to endure this for a long time. We do appreciate it very much and I just hope you keep this magic wand out and maybe find some relief for us over in North Las Vegas. We get a lot of complaints about it and I think you hit it on the head today when you answered the question because we get asked the question, "Who regulates this?" and "Why is it that you all can approve certain things but yet you can't condition and put restrictions on certain things?" And so I appreciate that answer today and hopefully, those out there who have this concern are listening and they have a better understanding but I think this brings a great relief to a lot of folks, especially a lot of the elderly folks who live in the urban core here. This helps us out a great deal but for me, I endured a lot living over in the Las Vegas corridor and we get the planes that you can almost look out of the kitchen window and see people sitting on the plane waving at you, it is just that close and disturbing. And then the helicopters but I always tell folks for me, the helicopter doesn't bother me, there is something about a helicopter flying by my house at 2 a.m., with the lights shining down I feel a little safer so I'm okay. So, thank you very much.

Rory Reid: Commissioner Woodbury.

Bruce Woodbury: Well, Mr. Chairman, I am very pleased we have reached this stage. A few years ago I was concerned that we might have been in the process of transferring the pain and suffering from one neighborhood of this community to another. First we talked about the Railroad Pass site and folks in the River Mountain neighborhood weren't too thrilled about that and then the GoKart site at Sloan, potentially, didn't work out. I think there would have been way too much temptation for some of the operators and the pilots to go too near the Anthem neighborhood. And so as Commissioner Reid recalls we had that rather massive public hearing out at the Anthem Community Center and I recall Favil West and I took a look at the map and asked Mr. Walker to look at the map and we somehow were able to find an opening three or four miles south of the Go Cart site and had no idea if it would really work and apparently it is working so I want to thank Mr. Walker and Jeff and the staff and Favil and all of the people on the committee who worked so hard and our congressional delegation to pass the necessary legislation to bring this about. I guess we're not totally there yet but I am stronger than ever in support of this site and I think we should move forward. I know this item doesn't call for any action but that would be my thoughts.

Randy Walker: I think I understand the will of the Board on this issue and I have for a quite a number of years, Commissioner, and we'll continue to do everything we can to make this a reality. We have to finish this federal process of the environmental assessment and get the approval by the FAA

to move forward on this site and then work out the land transfer with the BLM and once we get those processes done with the federal agencies then it is a matter of getting the hard work of the construction done. We certainly know how to do that part.

Rory Reid:

I just want to add my voice to the chorus. We're nearing the end of a very long story when I decided to run for the county commission, I didn't realize how big of a problem this was for people along Tropicana until I sat in their backyards and listened to what they listen to every day. We started encouraging Mr. Walker to find a solution. We brought together a lot of different people that had completely different interests and different neighborhoods felt different kinds of pain related to this and we had the environmental community that had concerns, a very complicated regulatory structure and the business interests of the helicopter companies. This is an example of how you know you can solve a complicated problem, if you bring everyone together and work real hard. I want to think everyone who was involved in this, our committee, DOA and it's staff, and particularly Jeff and all of the people that worked so hard on this. I think we found a way to solve a very complicated problem.

Randy Walker:

Thank you Mr. Chairman. I would like to echo my thanks to Jeff and all of the people who work with him. It has been a very difficult process. They put a lot of hours into this. I think their expertise and dedication has shown to you and all of the citizens that have been involved in this what a great staff we do have at the airport to address these issues.

Rory Reid:

I think we're for this, if I'm hearing right. Next item.

